JOINT FORCE QUARTERLY

JFQ

What Is Jointness?

Civil Affairs and MOOTW

THE QUADRENNIAL DEFENSE REVIEW

Military Innovation

Joint Training: Taking Sides

Summer 97

A PROFESSIONAL MILITARY JOURNAL

Very near the heart of all foreign affairs is the relationship between policy and military power.

—McGeorge Bundy

JFQ

A Word from the **Chairman**

In May of this year, Secretary Cohen and I appeared before the armed services committees of Congress to present the *Report of the Quadrennial Defense Review*. This report is the result of many months of hard work, incorporating extensive analysis by our brightest minds. The services and unified commands were integrated into the process at each step. It represents our best thinking to date about how to maintain a trained, ready force to support national objectives and prepare for an uncertain future.

The QDR process recognized that we face continuing instability in many parts of the world. Resurgent nationalism, the challenge of new and failing states, religious conflicts, and international terrorism make the security environment dangerous and unpredictable. The threat from weapons of mass destruction—unleashed by either a rogue state or a terrorist or criminal organization—is of growing concern. Because we are the dominant military power, potential adversaries may seek to counter our military superiority with asymmetric means, by using chemical or biological weapons, attacking information nodes, or through terrorism.

the QDR process recognized that we face continuing instability in many parts of the world

Our analysis reaffirmed that having the ability to fight two overlapping, major theater wars is essential in exercising global leadership. Although we will not face a peer competitor in the near or mid term, regional powers and coalitions hostile to our interests, values, and allies still confront us. While some question a two-theater strategy, it is clear that our ability to deter major conflicts, with the human tragedy and suffering they entail, is based upon our ability to project power on a global scale and overwhelm adversaries rapidly and decisively.

(continued on page 4)

CONTENTS

JFQ

1 A Word from the Chairman
by John M. Shalikashvili

FROM THE FIELD AND FLEET

6 Letters to the Editor

8 Report of the Quadrennial Defense Review
by William S. Cohen

15 National Security in the 21st Century: The Challenge of Transformation
by the National Defense Panel

20 The QDR Process—An Alternative View
by Jim Courter and Alvin H. Bernstein

27 Whatever Happened to Defense Industrial Preparedness?
by Ivars Gutmanis and John F. Starns

34 The Sisyphus Paradox: Framing the Acquisition Reform Debate
by Linda S. Brandt and Francis W. A'Hearn

39 Improving the Management of Reserve Forces
by John C.F. Tillson

CIVIL AFFAIRS AND MOOTW: FOUR BALKAN SKETCHES

45 Joint Endeavor—The Role of Civil Affairs
by Pamela J. Brady

48 The National Support Element in Hungary
by Bruce Castka

50 Transition of the Sarajevo Suburbs
by Kevin F. McCarroll and Donald R. Zoufal

54 The Challenge of Civil-Military Operations
by John J. Tuozzolo

59 War Criminals—Testing the Limits of Military Force
by F.M. Lorenz

OUT OF JOINT

66 What Exactly Is Jointness?
by Lawrence B. Wilkerson

69 Thinking About Revolutions in Military Affairs
by Williamson Murray

77 Military Innovation and Carrier Aviation—The Relevant History
by Jan M. van Tol

88 On Machine Guns and Precision Engagement
by Price T. Bingham

PHOTO CREDITS

The cover features F–15C at Jordanian air base (U.S. Air Force/Paul R. Caron). The front inside cover shows C–17 (U.S. Air Force/Andy Dunaway), patrol during Joint Guard (55th Signal Company, Combat Camera/Angel Clemons), Marines, Kernel Blitz '97 (Fleet Imaging Command, Pacific/Carl Richard), linehandlers on board *USS Stout* during replenishment in the Atlantic (U.S. Navy/Joe Hendricks). The table of contents shows helicopter crewman sharing food with Bosnian children (U.S. Navy/Chris Vickers). The back inside cover captures soldiers in Tuzla (U.S. Army/Larry Lane). The back cover renders M1A1 at Twenty-nine Palms (2d Marine Division, Combat Camera/R.L. Kigler), A–10 at Aviano for Deliberate Guard (U.S. Air Force/Steve Thurow), landing craft moving to *USS Denver* (Fleet Combat Camera Group,Pacific/Jeff Viano), soldiers heading for Camp McGovern after air assault in Bosnia (55th Signal Company, Combat Camera/Tracey L. Hall-Leahy).

91 Searching for Policy Coherence: The DOD Space Architect as an Experiment
by Joan Johnson-Freese and Robert Handberg

97 Information Warfare at the Crossroads
by Brian E. Fredericks

104 Leveraging Technology for Joint Training
by Jack Walker

109 Leveraging Human Interaction for Joint Training
by John Howard Eisenhour and Edward Marks

OF CHIEFS AND CHAIRMEN

115 Louis Emil Denfeld

THE JOINT WORLD

116 Organization, Lessons Learned, and History

OFF THE SHELF

119 A New Paradigm for the Army: A Review Essay
by F.G. Hoffman

121 'L' Is for Logistics: A Book Review
by Joseph E. Muckerman II

122 The Great War and the Birth of Armored Warfare: A Book Review
by Williamson Murray

123 War and Peace in the New World Order: A Book Review
by William H. Lewis

124 Cumulative Index (1996–97): Issues 13–16

Joint Force Quarterly

Hans Binnendijk
Director
Institute for National Strategic Studies
Editor-in-Chief

Robert A. Silano
Editor

Patrick M. Cronin
Director for Strategy and Policy Analysis
Institute for National Strategic Studies
Consulting Editor

Martin J. Peters, Jr.
Production Coordinator

William A. Rawley
Typography and Design Division
U.S. Government Printing Office
Art Director

Calvin B. Kelley
Copy Editor

JFQ is published for the Chairman of the Joint Chiefs of Staff by the Institute for National Strategic Studies, National Defense University, to promote understanding of the integrated employment of land, sea, air, space, and special operations forces. The journal focuses on joint doctrine, coalition warfare, contingency planning, combat operations conducted by the unified commands, and joint force development.

The opinions, conclusions, and recommendations expressed or implied within are those of the contributors and do not necessarily reflect the views of the Department of Defense or any other agency of the Federal Government. Copyrighted portions of this journal may not be reproduced or extracted without permission of copyright proprietors. An acknowledgment to *Joint Force Quarterly* should be made whenever material is quoted from or based on its contents.

This publication has been approved by the Secretary of Defense.

The editors invite articles and other contributions on joint warfighting, interservice issues that support jointness, and topics of common interest to the Armed Forces (see page 128 for details). Please direct all editorial communications to:

Editor, *Joint Force Quarterly*
ATTN: NDU–NSS–JFQ
300 Fifth Avenue (Bldg. 62)
Fort Lesley J. McNair
Washington, D.C. 20319–5066

Telephone: (202) 685–4220 / DSN 325–4220
Fax: (202) 685–4219 / DSN 325–4219
e-mail: JFQ1@ndu.edu
Internet: **http://www.dtic.mil/doctrine**

ISSN 1070–0692

August 1997

Joint Force Quarterly

GEN John M. Shalikashvili, USA
Publisher

ADVISORY COMMITTEE

LTG Richard A. Chilcoat, USA ■ *National Defense University*
Chairman

BG David A. Armstrong, USA (Ret.) ■ *Office of the Chairman*

VADM Dennis C. Blair, USN ■ *The Joint Staff*

A. Denis Clift ■ *Joint Military Intelligence College*

Col K.A. Conry, USMC ■ *Marine Corps Command and Staff College*

MG John S. Cowings, USA ■ *Industrial College of the Armed Forces*

Brig Gen Jerry M. Drennan, USAF ■ *Air Command and Staff College*

BG Joseph R. Inge, USA ■ *U.S. Army Command and General Staff College*

Brig Gen William R. Looney III, USAF ■ *Armed Forces Staff College*

Col David M. Lumsden, USMC ■ *Marine Corps War College*

Brig Gen Ralph Pasini, USAF ■ *The Joint Staff*

MG Robert H. Scales ■ *U.S. Army War College*

Maj Gen D. Bruce Smith, USAF ■ *Air War College*

RADM James R. Stark, USN ■ *Naval War College*

EDITORIAL BOARD

Hans Binnendijk ■ *National Defense University*
Chairman

Richard K. Betts ■ *Columbia University*

COL William D. Bristow, Jr., USA ■ *U.S. Army Command and General Staff College*

Eliot A. Cohen ■ *The Johns Hopkins University*

COL Robert A. Doughty, USA ■ *U.S. Military Academy*

Aaron L. Friedberg ■ *Princeton University*

Col Robert J. Garner, USMC ■ *Armed Forces Staff College*

Alan L. Gropman ■ *Industrial College of the Armed Forces*

Col Douglas N. Hime, USAF ■ *Naval War College*

Mark H. Jacobsen ■ *Marine Corps Command and Staff College*

Thomas L. McNaugher ■ *The RAND Corporation*

William H.J. Manthorpe, Jr. ■ *Joint Military Intelligence College*

CAPT Rosemary B. Mariner, USN ■ *National War College*

John J. Mearsheimer ■ *The University of Chicago*

LTG William E. Odom, USA (Ret.) ■ *Hudson Institute*

Lt Col Robert C. Owen, USAF ■ *Air Command and Staff College*

James H. Toner ■ *Air War College*

LtGen Bernard E. Trainor, USMC (Ret.) ■ *Harvard University*

COL Lawrence B. Wilkerson, USA ■ *Marine Corps War College*

COL Terry J. Young, USA ■ *U.S. Army War College*

A PROFESSIONAL MILITARY JOURNAL

A WORD FROM THE CHAIRMAN

(continued from page 1)

We also see a continuing requirement for forces to conduct contingency operations across the entire spectrum, from natural disasters and humanitarian assistance to peace enforcement and noncombatant evacuations. While we will not sacrifice readiness for core warfighting missions, military operations other than war will remain an important part of our strategy of engagement.

The Clinton administration's strategy of shape-respond-prepare was fully reflected in the QDR report. We shape the strategic environment with forward presence, combined exercises, security assistance, and a host of other programs that keep us engaged in critical regions and help defuse potential conflict. When necessary, we respond to crises through a combination of forward deployed forces, pre-positioned equipment and supplies, and trained, ready forces which can rapidly move to the scene.

At the same time we must prepare for the future with a well-conceived, adequately funded modernization program that provides the Armed Forces the right tools, right technology, and right systems to assure dominance over any opponent. *Joint Vision 2010*, our conceptual template for future joint operations, will help integrate new systems with evolving joint doctrine to ensure that they are synchronized for maximum effect.

Throughout the review, we realized that we could not sacrifice readiness today to generate funds for modernization tomorrow. Our challenge was to find a way to do both. In order to fund current readiness and future modernization, we recommended significant personnel cuts in both the active and Reserve components, for military as well as civilian strength. Most cuts will come from the sustainment and infrastructure parts of the force. With the increase in operational deployments that has marked the post-Cold War period, we could not make deep cuts in operating forces and continue to support our strategy.

Reductions in personnel recommended in the QDR report represent genuine savings, but those alone are not sufficient to fund the requisite level of modernization. As weapons systems age and new technologies come on line, we must modernize to realize the revolution in military affairs. With constant budgets projected for the foreseeable future, we must rely on increased efficiencies to achieve the savings needed to become a 21st century joint force.

Part of the answer to the funding dilemma is additional base closures. Some infrastructure represents capacity we no longer need; with defense budgets down by 40 percent and forces cut by a third, we have reduced our bases by only 21 percent. Although politically painful, closing bases is

DOD (Helene C. Stikkel)

Briefing the QDR Report.

essential if we are to preserve a ready force and engage in prudent modernization.

Funding modernization will also demand a "revolution in business affairs" to increase the efficiency of support and acquisition functions. The Deputy Secretary of Defense is now heading the Defense Reform Task Force that will recommend how to do that. Outsourcing, privatizing, and reducing the number of Federal regulations under which we operate are important initiatives that will generate real savings and enable us to achieve readiness *now* and modernization *soon*.

implementing the recommendations in the QDR report will be neither easy nor painless

The QDR report is not the end of the process but rather the start. Its recommendations are a blueprint, but much remains to be done. At present the National Defense Panel—an outside body comprised of defense experts chartered by the Secretary of Defense—is conducting an independent assessment as part of the QDR process and will release its own report at the end of the year. As the joint community continues to explore new practices and systems, we will refine our thinking to improve both the efficiency and effectiveness of joint operations.

Critics have begun to question the assumptions and conclusions found in the QDR report. Some claim that their service or system warranted greater attention and support. Others believe that the current force structure will fall below prudent levels. Still others want deeper force cuts to pay for new, more advanced weaponry. The fact that this criticism is distributed so evenly across the defense establishment suggests that the current review may be right on track.

Implementing the recommendations in the QDR report will be neither easy nor painless; real change never is. But we must recognize that the health and vitality of the Armed Forces depend on both current readiness and future modernization. We cannot afford to sacrifice one for the other. To achieve the goal of a trained and ready force today and tomorrow, everyone—in Congress, the Department of Defense, and the active, Reserve, and civilian components—has a key role to play. Only by working together in a spirit of cooperation can we realize the greatness the Nation expects and deserves in the new century.

JOHN M. SHALIKASHVILI
Chairman
of the Joint Chiefs of Staff

Letters . . .

THE NAVY'S RECORD

To the Editor—Some points made by Douglas C. Lovelace and Thomas-Durell Young in "Joint Doctrine Development: Overcoming a Legacy" (*JFQ*, Winter 96–97) misrepresented my efforts at the Naval Doctrine Command. It was not a response to the spotty record of the Navy on doctrine. It was my own initiative and did not have universal support in the command because many thought I was wasting my time. Fortunately, the commander during this period, RADM Fred Lewis, believed that it was value added.

My look at the evolution of naval doctrine was an endeavor to convince my colleagues that it was not unwise or unprofessional to write down how the Navy intends to conduct its business. It was also an attempt to ensure that the great lessons of history are not lost (see my article entitled "Developing Naval Doctrine . . . *From the Sea*," *JFQ*, issue 9). When I got to the Naval Doctrine Command it was often said that navies have never had any doctrine—hence most went about their jobs without ever looking to the past. I set out to correct that misperception, which had nothing to do with responding to outside critics of the Navy.

As for the comment that my work amounted to unconvincing revisionism, I would say that the jury is still out on that question. If the Navy goes about writing doctrine without any regard to the past, then my efforts were in vain. If it is also looking back before developing doctrine, then I would say it was convincing. Based on what I hear today the Navy is examining what navies have done historically. As to whether what I wrote was convincing to outsiders is beside the point since I never sought to influence external audiences.

—James J. Tritten
Former Academic Advisor to
Commander, Naval Doctrine Command

CRASHING THROUGH THE BARRICADES

To the Editor—The prize winning essays in the RMA Essay Contest published in your last issue (*JFQ*, Spring 97) are important markers of both the direction and pace of serious thought on RMA. Williamson Murray got part of it right in his introduction—we need debate, experimentation, and reasoned discussion on where we are going, and these essays are examples of how to do it.

Unlike Murray, however, I believe the significance of the essays is not a diversity of views (that does tend to happen in a revolution!), but rather the assumptions they share. Here are a few:

A revolution really is underway. A few years ago, some historians attacked this hypothesis with gusto: "It's much too early to tell if big changes are afoot. We're experts and can assure you this is no RMA," and so on. Yet thankfully each essay gets beyond the academic point of whether there is a revolution. They all accept that there is one and go on to ask "what now?" The essays by Stavridis and Lwin address how an enemy might seek to deal with our revolution. Gumahad, Echevarria, and Morningstar each explore how the RMA will transform doctrine and organization while Schneider offers an anthropological and cybernetic perspective. The common thread running through them is that it's here, it's big, and it's a revolution.

It is an American revolution. Perhaps because it's obvious, the authors do not waste much verbiage on where it's taking place. They accept it's an American revolution. What's happening may, as Stavridis and Lwin warn, trigger other RMAs or asymmetric counters by clever General Tzus (thus we must be prudent about the course of our revolution). Doctrine may, as Gumahad, Schneider, Echevarria, and Morningstar explain, change around the world. But surely that only proves the significance of what we are doing.

Let's get on with it. Each essay advocates moving forward, seizing the dynamics driving change, and consummating this American RMA. None implies we should do so mindlessly. Each recognizes the dangers associated with change. But none recommends either turning back or trying to hold off the future. Instead, a thread of pragmatic optimism runs through each of them.

That's one of the interesting contrasts between the introduction and the essays themselves. Murray seems far more pessimistic and far less convinced that we can understand and control what we've begun. Perhaps he's correct. But maybe his doubt has something to do with his vocation. Historians have trouble dealing with rapid changes—with revolutions—since such upheavals defy continuity and repetition. In nonrevolutionary times we can turn to historians for explanations and what they tell us normally makes sense. They are, after all, among the best purveyors of wisdom that is conventional. But in revolutionary times their authority weakens and a historian's claim that the situation we face today is "what the military of the interwar years faced in 1923"—or that the future will be very much like the present—rings hollow.

But Murray is right on one point: the need for experimentation and critical scrutiny. Let's do it. But let's do it more broadly, more quickly, and differently than we are doing at present. Why don't we put new technologies into the hands of the men and women in the services, free at least some of them from the demands of readiness reporting, and push them to see if the technology works and how changes in doctrine and organization could make it work better? Why don't we seize on ideas like the "vanguard force" proposed by General Reimer and move the debate about the American RMA to empirical trials—*real* tests?

—James R. Blaker
Science Applications
International Corp.

OVER THE BOUNDING WAVES

To the Editor—Your review of *Creating a New Civilization: The Politics of the Third Wave* in the Spring 97 issue offered some interesting insights into the Tofflers and their book yet failed to raise a number of serious questions. Although I make no pretense of being able to resolve those questions, it may be useful to spell them out for the benefit of your readership.

Without doubt modern science has provided us with knowledge of natural phenomena that has produced dramatic changes in almost every facet of human life. From genetic research which led to biotechnological breakthroughs to physics which brought about innovations in the conduct of war, we approach the new century with possibilities that were once considered inconceivable. Few would deny these advances though many thoughtful people would admit that the significance of such changes in our lives remains enigmatic.

In *Creating a New Civilization*, Alvin and Heidi Toffler assert that modern technology has promoted so many revolutionary changes that civilization itself has been transformed. With little acknowledgment to dialectical thinkers such as Hegel, Marx, and Engels, the Tofflers slightly alter the Marxian dialectical movement of history. For Marx modes of production—dominant means by which humans sustain themselves in any given historical period—determine the way of life. For the Tofflers human history is best understood in terms of a metaphor of waves: the agricultural, the industrial, and finally the technological, the third wave. But the Marxian formulation of historical change is barely altered: an existing civilization is confronted and overwhelmed by a rising wave. Resistance to new forms of civilization by withering elements of the old continues so that residual aspects of the past continue until forced by circumstances to surrender to the movement of history.

JFQ WELCOMES
your letters and comments.
FAX your correspondence to
(202) 685–4219/DSN 325–4219 or
send it on the internet to JFQ1@ndu.edu

Like the work of Marx, the wave is an interesting way of viewing history, but the metaphor should be seen for what it is. Like all metaphors there is the risk of distorting history by forcing ideas and facts into a preconceived framework.

At the center of the Toffler third wave is information, which is now available in a quantity and at a pace unknown to primitive technological societies. The authors also describe this process as "creating new networks of knowledge" that incorporate assumptions, hypotheses, images, and language codes. Their discussion of the knowledge system of the third wave obfuscates subtle but important distinctions. Careful reading indicates that they do not differentiate between knowledge and information or between knowledge and opinion. Although modern technology is a conduit for information not all information is knowledge. Some information, as the debate over censorship of the information highway suggests, is foolish and even scurrilous and should not be confused with knowledge. The greatest challenge facing the users of electronic networks is processing available information or discriminating between the important and the unimportant. Today thoughtful people have more noise to filter in order to evaluate reality.

More significantly, we must not confuse gathering information with acquiring knowledge. After information has been filtered, it must be understood in light of its relevance. The meaning of something—whether related to human activity or theoretical subjects—does not come simply from gathering or distributing information. A physician's transmission of medical information in mere seconds around the world to another physician becomes significant and beneficial because of their understanding of medicine. Obfuscating the processing of information with knowledge may blind us to the fact that there is no substitute for knowledge. The transmission of information and other technological innovations can have great advantages for national security, but we must never lose sight of the importance of knowledge of warfighting and the ends we seek to achieve.

In *Creating a New Civilization*, the Tofflers propose guidance for 21st century democracy. Alarmed over the collapse of consensus in contemporary America, they see the country beholden to majority rule that is not adapting to the increasing diversity of the third wave. They suggest a form of electronic town hall meeting that will enable citizens to participate in political decisionmaking. Their very confusing discussion of the Founders and representative democracy dismisses the fear of demagoguery in *Federalist Papers*—according to the authors a problem of an overly emotional public response—by advocating a cooling off period before making decisions. A proper response to the Tofflers would require an education in the nature of representative democracy, what Publius understood as refining the will of the people, and the deliberative function of a legislature. Again, the question is not whether the means to measure public opinion exist, but what the consequences are for the public good if such changes are implemented. I fear for the stability and harmony of the Nation if such changes are realized.

Technological change can be applied for better or worse. To understand whether the fruits of modern science serve or harm us requires pondering what is meant by better or worse—or some standard by which to guide such choices. The advent of a technology does not prove its benefits. The Tofflers confuse the relationship between technology and the public good. Worse, they hinder posing important questions. Beware of false prophets and those who say more than they know.

—Joseph E. Goldberg
Director of Research,
Industrial College of the Armed Forces

Missing an issue?
Copies of back numbers of JFQ are available in limited quantities to members of the Armed Forces and institutions. Please send your request to the Editor at the address or FAX number listed on the masthead.

A CAPITAL OFFENSE?

To the Editor—Although I find *JFQ* informative and interesting, one thing about it is disturbing. The term Marine—used to identify the Marine Corps, a group or unit of Marines, or an individual Marine—is always capitalized. Always. There is no such thing as "a marine." No such animal. Capitalize Marine, Marines, Marine Corps, U.S. Marine, U.S. Marines, U.S. Marine Corps, and United States Marine Corps in future issues!

—Maj Eric J. Kennedy, USMC (Ret.)
Rock Island, Illinois

[EDITOR'S NOTE: Maj Kennedy's letter raises a point that may also concern other marines—as well as soldiers, sailors, and airmen—on capitalizing the names of services and servicemembers. The only use of the term in question without an initial capital M occurs when reference is made to an individual or group of individuals. Thus the short and long renderings of the name of a service (in this case, Marine Corps, U.S. Marines, U.S. Marine Corps) or any terms denoting a service as a whole (here, *the* Marines) are always capitalized. But individual members of a service (such as marine or marines) are not. The ultimate (official) guide in matters of style makes this clear:

> Marine Corps; the corps;
> Marines (the corps); *but* marines (individuals)
> —*United States Government Printing Office Style Manual* (1984)

Since the inaugural issue of *JFQ* went to press in 1993, there has been a deliberate effort to follow a standard form of capitalization when referring to the services and members of the Armed Forces. Therefore it is the U.S. Army or the Army, the U.S. Navy or the Navy, etc. Moreover, to strike a consistent balance in the pages of this journal, equal deference is given to designating an individual servicemember: soldier, sailor, marine, or airman (as well as coastguardsman when appropriate). Subscribers to *Marine Corps Gazette* may expect to always see Marine capitalized just as readers of *Airpower* magazine may confront the term Airmen. This is an unabashed token of service culture. But in the spirit of jointness—not "parade ground" political correctness—*JFQ* seeks symmetry in using themes and symbols (even upper case letters) in representing every service. *Semper Fi.*]

Special: The Secretary's Message

Report of the Quadrennial Defense Review

By WILLIAM S. COHEN

During most of the Cold War the United States pursued a strategy of containing the Soviet Union. In 1985, America appropriated about $400 billion for DOD (in constant FY97 dollars), which constituted 28 percent of our national budget and 7 percent of our gross national product. We had more than 2.2 million men and women under arms, with about 500,000 overseas, 1.1 million in the Reserve forces, and 1.1 million DOD civilians. Defense companies employed 3.7 million more, and about $120 billion of our budget went to procurement contracts.

Since 1985, America has responded to vast global changes by reducing its defense budget by some 38 percent, its force structure by 33 percent, and its procurement programs by 63 percent. Today, the DOD budget is $250 billion, 15 percent of the national budget, and an estimated 3.2 percent of our gross national product. We now have 1.45 million men and women under arms, 200,000 overseas, 900,000 in the Reserves, and 800,000 DOD civilians. Today, $44 billion is devoted to acquisition from a smaller defense industrial base employing 2.2 million workers.

In making these reductions, we have carefully protected the readiness of our military to carry out its currently assigned missions. But it has become clear that we are failing to acquire the modern technology and systems that will be essential for our forces to successfully protect our national security interests in the future.

Where We Are Going

Work on the Quadrennial Defense Review followed a path that led from threat, to strategy, to implementation, and finally to resource issues.

We started with a fresh, unblinking look at the world today and over the temporal horizon to identify the threats, risks, and opportunities for national security. In addition, we recognized that the world continues to change rapidly. We cannot expect to comprehend fully or predict the challenges that might emerge from beyond the time lines covered in defense planning and budgets. Our strategy accepts such uncertainties and will prepare the Armed Forces to deal with them.

From that analysis, we developed an overarching defense strategy to deal with the world today and tomorrow, identify required military capabilities, and define programs and policies needed to support them. Building on national security strategy, we determined that defense strategy for the near and long term must continue to shape the strategic environment to advance U.S. interests, maintain the capability to respond to the full spectrum of threats, and prepare now for the threats and dangers of tomorrow and beyond. Underlying this strategy is the inescapable reality that as a global power with global interests to protect, the United States must remain engaged with the world diplomatically, economically, and militarily.

The Honorable William S. Cohen is the twentieth Secretary of Defense and previously served three terms in the U.S. Senate.

After developing the strategy, we anchored its implementation in the fundamentals of military power today and in the future: quality people, ready forces, and superior organization, doctrine, and technology. We need quality people to operate more complex technology and undertake more complex joint operations. We need ready forces in a world of sudden events that often will demand that our forces come "as you are" on a moment's notice. The information revolution is creating a revolution in military affairs that will fundamentally change the way U.S. forces fight. We must exploit these and other technologies to dominate in battle. Our template for seizing on these technologies and ensuring military dominance is *Joint Vision 2010*, the plan set forth by the Chairman for military operations of the future.

A spectrum of feasible approaches is available to sustain our current ability to shape and respond to the world as we see it now, while preparing the future force for the world of tomorrow. The Quadrennial Defense Review examined three alternative paths that differed in where they accepted risks and emphasized investment over the near term, mid term, and long term.

One path is to focus more on current dangers and opportunities. This path does not ignore the future but sees today's threats demanding more attention and tomorrow's threats far enough away to give us ample time to respond. This option would maintain the current force structure exactly as is. But it would also result in less investment in modernization—that is, a greater aging in major platforms, few new systems, and a delay in fully exploiting the revolution in military affairs.

we preserved funding that will ensure our domination of the battlespace in 2010 and beyond

Another path is to focus more on future dangers and opportunities. This path does not ignore the present but sees greater dangers over the horizon, including the possible emergence of a regional great power. This path would devote more resources to building the future force. But to do so would also require significant reductions in the current force. This would sharply reduce our ability to shape the international environment and undermine our security commitments to our allies while potentially encouraging aggressors. And most importantly, it would erode our military capability, stress the troops, and put them at more risk in battle in the near term and mid term.

The path we have chosen strikes a balance between the present and the future, recognizing that our interests and responsibilities in the world do not permit us to choose between the two. This approach retains sufficient force structure to sustain American global leadership and meet the full range of today's requirements. At the same time, it invests in the future force with a focused modernization plan that embraces the revolution in military affairs and introduces new systems and technologies at the right pace.

This approach reallocates resources and priorities to achieve the best balance of capabilities for shaping, responding, and preparing over the full period covered by the review. As part of that reallocation of resources, we will trim current forces—primarily in the tail (support structure) and modestly in the tooth (combat power). The result will be a force capable of carrying out today's missions with acceptable strategic risk, while allowing us to stabilize our investment program in order to achieve the future joint force capabilities described in *JV 2010*. Our plan puts us on a steady and realistically executable trajectory toward that force. We preserved funding for the next generation of systems—such as information systems, strike systems, mobility forces, and missile defense systems—that will ensure our domination of the battlespace in 2010 and beyond.

Finally, DOD plans are fiscally responsible. They are built on the premise that, barring a major crisis, spending is likely to remain relatively constant. There is a bipartisan consensus in America to balance the Federal budget by the year 2002 to ensure the Nation's economic health, which in turn is central to our fundamental national strength and security. The direct implication of this fiscal reality is that Congress and the American people expect DOD to implement its defense program within a constrained resource environment. The fiscal reality did not drive the defense strategy we adopted, but it did affect our choices for its implementation and focused our attention on the need to reform our organization and methods of conducting business.

What's New?

First, the shape-respond-prepare strategy builds on the strategic foundation of past reviews and our experience since the end of the Cold War. We have determined that U.S. forces must be capable of fighting and winning two major theater wars nearly simultaneously. However, while the Bottom-Up Review focused primarily on that difficult task, we have also carefully evaluated other factors, including placing greater emphasis on the continuing need to maintain continuous overseas presence in order to shape the international environment and to be better able to respond to a variety of smaller-scale contingencies and asymmetric threats.

U.S. Air Force (Ken Hammond)

The Quadrennial Defense Review has also placed much greater emphasis on the need to prepare for the future, in which hostile and potentially hostile states will acquire new capabilities. This demands increased and stable investment in modernization in order to exploit the revolution in technology and to transform the force towards *JV 2010*. We must fundamentally reengineer our infrastructure and streamline support structures by taking advantage of the revolution in business affairs that has occurred in the commercial world. We must focus on the future and not the past. Only through such efforts can we realize the cost efficiencies necessary to recapitalize the force.

Second, future forces will be different in character. The programs we are undertaking now to exploit the potential of information technologies and leverage other advancing opportunities will transform warfighting. New operational concepts and organizational arrangements will enable joint forces to achieve new levels of effectiveness across the range of conflict scenarios. We want our men and women to be masters of any situation. In combat, we do not want a fair fight—we want capabilities that will give us a decisive advantage.

JV 2010 describes four operational concepts. Together they promise significant advantages in any operation or environment, something we call "full spectrum dominance." At the heart of the vision is information superiority—the ability to collect and distribute to U.S. forces throughout the battlefield an uninterrupted flow of information while denying an enemy's ability to do the same.

Dominant maneuver. Having a full picture of the battlefield, advanced mobility platforms, and agile organizations, U.S. forces will be able to attack enemy weak points directly throughout the full depth of the battlefield.

Precision engagement. Precision engagement will enable U.S. forces to deliver the desired effects at the right time and place on any target. Having near real-time information about the target, a common awareness of the battlespace for responsive command and control, and the flexibility to reengage with precision, U.S. forces will be able to destroy key nodes of enemy systems at great distances with fewer munitions and less collateral damage.

Full-dimensional protection. Multiple layers of protection for U.S. forces and facilities at all levels will enable U.S. forces to maintain freedom of action during deployment, maneuver, and engagement. To achieve this goal, full-dimensional protection requires a joint architecture that is built upon information superiority and employs a full array of active and passive measures.

Focused logistics. By fusing information, logistics, and transportation technologies, U.S. forces will be able to deliver the right support at the right place on the battlefield at the right time. This will enable more effective delivery of tailored sustainment packages to strategic, operational, and tactical echelons. The overall effect will be to reduce the amount of logistics support while ensuring a more capable combat force.

In sum, we will continue to seek the best people our Nation can offer and equip them with the best technology our scientists and engineers can produce. This technology will transform the way our forces fight, ensuring they can dominate the battlefield with a decisive advantage at all times across the full spectrum of operations from peacekeeping and smaller scale contingencies to theater war. The key to success is an integrated system of systems that will give them superior battlespace awareness, permitting them to dramatically reduce the fog of war.

the services have targeted reductions by streamlining and outsourcing nonmilitary-essential functions

This system of systems will integrate intelligence collection and assessment, command and control, weapons systems, and support elements. It will connect the commanders to the shooters and suppliers and make available the full range of information to both decisionmakers in the rear and the forces at the point of the spear.

Achieving such capabilities is not an easy task and cannot be done in one leap. It is a step-by-step process involving the development of new technologies, investment in new platforms and systems, new concepts, training and doctrine, and formation of new organizational structures. But these are not just ideas—we have already started down the road and we have tangible results.

The third new element is that our program is going to be fiscally executable. For several years our defense program has suffered from unrealized expectations with regard to modernization. Failure to address such problems would undermine our ability to execute the strategy. For reasons described in the report, projected increases in funding for modernization have continually been delayed as modernization funds migrated to operations and support accounts to pay current bills. While contingency operations have contributed to the problem, they have not been the chief cause. Failure to address fiscal problems would undermine our ability to execute the strategy. Therefore, an important corollary to the strategy and force choices in the review was a focus on rebalancing our overall defense program, improving stability in that program, and fixing deficiencies in service and defense-wide budgets to ensure that modernization targets are met.

What's Next?

The first and most visible aspects of our plan to rebalance our programs are necessary modest reductions in military end strength and force structure. These reductions are offset in part by enhanced capabilities of new systems and streamlined support structures. The savings that will result, combined with the program stability we can achieve from realistic expectations, will enable us to pay for the transformation of forces required by the strategy. To preserve combat capability and readiness, the services have targeted reductions by streamlining infrastructure and outsourcing nonmilitary-essential functions. The result is a balanced, flexible force that has sufficient depth to support the strategy, that matches structure to end strength so that hollowness does not set in, and that will continue to evolve toward *JV 2010* capabilities.

Highlights of QDR decisions include:

- The Army will retain 10 active, combat-ready divisions. It will also accelerate its Force XXI modernization plan, which will revolutionalize combat capability by enhancing battlefield awareness through modern information technology. A reduction of some 15,000 active duty personnel will be carried out by deactivation, consolidation, and realignment of headquarters and support facilities to improve overall support to the combat organizations.
- The Army will restructure its Reserve component. It will shed some combat structure that provided for strategic depth during the Cold War which is now excess. It will also accelerate conversion of units from combat to combat support and combat service support roles, relieving an important warfighting shortfall and enhancing the ability to support state missions. Adjustments will result in a Reserve component end strength reduction of some 45,000 personnel.

■ The Navy will retain 12 carrier battle groups and 12 amphibious ready groups but will reduce the number of surface combatants from 128 to 116. The reduced size of the surface fleet will be offset by newer and more capable systems coming on line. The Navy will reduce the number of attack submarines from 73 to 50, reflecting changes in requirements. It will reduce the number of F/A–18E/F aircraft to be procured from 1,000 to 548; transition to the joint strike fighter as soon as possible, with the goal of initial Navy production in fiscal year 2008; and retain the option to procure additional F/A–18 E/F up to a maximum of 785 if joint strike fighter development requires more time. Fleet reductions, combined with streamlining overseas infrastructure and the transfer of some combat logistics ships and functions to the Military Sealift Command, will allow the Navy to reduce active and Reserve end strength by 18,000 and 4,100 personnel respectively.

■ The Air Force will consolidate fighter and bomber units to streamline command structure and shift one active fighter wing to the Reserve. It will pursue an aggressive outsourcing plan that accelerates competition of support functions. The Air Force will reduce its structure for continental air defense and handle the U.S. air sovereignty missions with other forces. The fighter forces available for deployment to support the strategy will be 12 active and eight Reserve fighter wing equivalents. These initiatives will allow the Air Force to realize a reduction of approximately 27,000 active duty personnel. The Air Force will proceed with the F–22 aircraft program to replace the F–15 C/D air superiority capability and perform air-to-ground missions. Consistent with its greater capability, the total number to be procured will be reduced from 438 to 339.

■ The Marine Corps will take modest reductions in end strength through a restructuring of support responsibilities. The Corps will maintain a three Marine expeditionary force capability to support the strategy. MV–22 tiltrotor aircraft procurement will be accelerated to meet the urgent need to replace aging medium-lift capability, while the total number procured will be reduced to 360, consistent with the system's superior capability.

■ The total active duty end strength will be reduced to 1,360,000 (down 36 percent from 1989), with 835,000 in the Reserve (down 29 percent from 1989). Civilian personnel will decline to 640,000 (down 42 percent from 1989).

■ We have decided to slow the Army theater high altitude area defense system because of serious technical problems. Shifting the deployment date from 2004 to 2006 improves the stability of the program, lowers risk, and allows us to explore using common components with the Navy theater-wide missile defense program. Other theater missile defense programs remain on track.

■ National missile defense remains a high priority. The administration and Congress have agreed to keep this program on an accelerated research and development path aimed at creating the option to make a decision on deployment possible as early as fiscal year 2000, if the threat warrants. The goal of the program is to be able to deploy an initial capability within three years after the decision on deployment is made. QDR analysis concluded that the fiscal year 2000 target could not be met within the current program budget. We are directing additional funds to missile defense, but even with additional funds, national missile defense will remain a program of high schedule and technical risk.

■ The Quadrennial Defense Review highlighted the danger of asymmetric threats, ranging from nuclear, biological, and chemical weapons to attacks via information warfare and terrorism. We will give increased focus and funding to countering such threats.

■ The Quadrennial Defense Review studied a number of options regarding strategic nuclear forces. The review concluded that the policy and strategy to maintain nuclear forces are still correct and needed. In line with congressional instructions we will maintain the START I force posture in the current budget while the Russian Duma considers ratification of START II. To continue this in FY99 would require an additional $64 million. We remain committed to START II and negotiating further reductions in a START III agreement after START II is ratified. Savings from deeper strategic nuclear force reductions could free resources for national missile defense.

■ Based on QDR analysis of our future needs versus our remaining infrastructure, DOD will request authority for two additional rounds of base realignment and closure and for restructuring laboratories, research, development, and test facilities. We will look for additional opportunities to outsource many functions and work with Congress to radically reengineer and deregulate DOD business practices.

■ Finally, a series of defense-wide program adjustments will free up funds for increased investment in key programs.

Modernization depends upon command, control, communications, computers, intelligence, surveillance, and reconnaissance (C^4ISR) systems. The important, central role of these systems, and the large resources that must be devoted to them, inspired a hard, sweeping look at our entire effort. The general focus and amount of resources were determined to be appropriate. We made a similar study of munitions programs and found that there is a high payoff for the large investment we are making in precision weapons and that the focus and the scale of effort are appropriate.

The transformation of our forces is an ongoing process. *JV 2010* provides a conceptual umbrella for long-range visions and plans developed by the services and other DOD components, which are outlined in the QDR report. The U.S. military is committed to realizing joint and service visions of modern warfare and is already taking a number of steps to do so. It is a total force effort, involving both active and Reserve component forces. By undertaking efforts ranging from studies and wargames to advanced concept technology demonstrations and experiments, the Armed Forces are developing and testing concepts and capabilities that will ensure their ability to transform for the future. Brief summaries of these efforts are included in the report.

The final steps in preparing for the future, essential to putting our program on a fiscally sound basis, are to shed excess infrastructure and fundamentally reengineer business processes.

Downsizing infrastructure has fallen behind downsizing of force structure in spite of four base realignment and closure rounds. Since the first base closure round, force structure has come down by 33 percent and will have declined by a total of 36 percent when we finish the reductions under the Quadrennial Defense Review. During the same period, we will have reduced domestic infrastructure by 21 percent measured by the replacement value of physical facilities. In essence, our combat forces are headed towards the 21st century, but our infrastructure is stuck in the past. We cannot afford this waste of resources in an environment of tough choices and fiscal constraint. We must shed more weight.

Although the savings from base realignment and closure come slowly and require up-front costs, the savings are significant. Last year, we began to receive annual savings beyond the annual costs for the first four base closure rounds, and by 2001 recurring savings will exceed $5 billion every year. The review found that we have enough excess infrastructure to require two additional rounds of base closures for which we will seek authority. Included in the reduction must also be our research and development and test facilities, laboratories, and ranges.

I have established a task force to consolidate functions, eliminate duplication, and improve efficiency

We also need to take advantage of business process improvements pioneered in the private sector. Over the past decade, the commercial sector has reorganized, restructured, and adopted revolutionary new business and management practices in order to ensure its competitive edge in the rapidly changing global marketplace. It has worked. Now DOD must adopt and adapt the lessons of the private sector if the Armed Forces are to maintain a competitive edge in the rapidly changing global security arena.

DOD has made much progress already in overhauling the defense acquisition system—with full support from Congress. Those efforts are paying significant dividends, permitting us to get far more for each dollar spent previously. We have also achieved savings through streamlining our organizations and business practices; for example, replacing cumbersome and expensive systems for minor purchases with simple credit card operations. However, we need to go much further and deeper, and we need congressional support.

We are examining the best opportunities to outsource and privatize non-core activities, but many opportunities are restrained by regulations and practices built up during the Cold War. We need to deregulate defense just as we have deregulated many industries so we can reap the cost and creativity benefits of competition. A guiding principle is that the government should not perform private sector-type functions, and this should also be true of the defense sector unless a compelling military need is demonstrated.

I have established a defense reform task force to review the Office of the Secretary of Defense, defense agencies, DOD field activities, and military departments, and look for ways to consolidate functions, eliminate duplication of effort, and improve efficiency. The task force will consult with Congress and business executives who have successfully streamlined their corporations in recent years. It will also work closely with the National Defense Panel, the independent, congressionally mandated board that is reviewing the Quadrennial Defense Review, and with the Vice President's National Performance Review. I have directed the task force to submit its report and findings to me by November 30, and I will act on its interim findings as appropriate.

Many current DOD institutions and infrastructures enjoy significant political support for their local economic contributions. However, the primary test must be their contribution to overall military effectiveness. We must act now if we are to have the resources to invest in modernization in the mid term and support capabilities to keep pace with military capabilities in the long term.

This approach reflects administration efforts to reinvent government and the commitment of Congress to focus government on core functions. As a former elected official who has witnessed the difficult transformation in communities affected by base closures, I fully appreciate the trauma that often is involved. But ultimately, we need to decide what is more important:

- keeping a maintenance depot in government hands or putting advanced technology in soldiers' hands
- protecting a facility or protecting our forces
- preserving local defense contracts or promoting solid enlistment contracts.

These are stark choices—and while we must make changes wisely and with compassion for civilians who have given years of faithful service, we must also keep faith with the men and women of the military. Over half of them have known only an armed force steadily shrinking in size. There is great uncertainty about the future. Yet, they perform magnificently as they serve our country abroad and at home. We must take care of them and their families and ensure that we have

DOD (R.D. Ward)

John J. Hamre briefing creation of the Defense Reform Task Force, May 14, 1997.

given them the best tools to do the jobs we ask. If we take care of them, they will take care of us.

The report describes in detail the process we followed, choices we made, our reasons for making them, and the benefits and risks inherent in each. The report is laid out exactly as the review progressed, beginning with a description of the global environment. It reaches conclusions on the best strategy for achieving our national goals, and it describes a series of integrated options by which that strategy could be executed. It also analyzes the fiscal environment in which those options had to be considered. From our choice among those options flowed a series of structural and programmatic decisions required to implement the strategy.

The strategy and the plan presented in this report will give us the military capability and forces we need throughout the 1997–2015 time frame and beyond. The plan balances the needs of the present with challenges of the future. Our program provides for the force to deal with present threats while also making available the resources to transform that force to one capable of seizing the opportunities and dealing with the threats of 2015. That transformation already has begun as outlined in joint and service vision plans and is being tested in warfighting experiments.

The plan we have outlined is an integrated whole. It is based on a strategy, but we cannot carry it out without sufficient resources. Those resources exist in the DOD budget if we use them wisely. Doing so requires tough choices and changing the way we do business. It will require legislation in some areas and congressional support. Most of all, it requires a joint effort, focused on the goal of protecting our Nation as a whole and not the interests of any region, industry, or special interest. If we are not willing to do business in new ways, we need to face that fact and be prepared to pay more for less impact. Or we can decide to do less and be less as a nation.

The Greek rhetorician Gorgias spoke of the great challenge of choosing, when choosing is most difficult, "to speak or not to speak, to do or leave undone," and do so with "the indispensable virtues—prudence and firmness—one for choosing a course, the other for pursuing it."

America begins the new millennium as the sole superpower, the indispensable nation. The responsibilities are heavy and choices difficult. But with those responsibilities and choices come enormous benefits and opportunities. The QDR report sets forth a vision of what lies ahead as our Nation embarks on a new century—the dangers and possibilities—as endorsed by the President as commander in chief. It is not enough for us to speak; it is time to decide. The next generation will judge us for our actions, not our words. Working with Congress and by extension the American people, we have chosen this course with prudence. We must now pursue it with firmness. JFQ

This article represents an edited and abridged version of "The Secretary's Message" that prefaced the *Report of the Quadrennial Defense Review* issued in May 1997.

National Security in the 21st Century:
The Challenge of Transformation

By THE NATIONAL DEFENSE PANEL

U.S. Air Force (Val Gempis)

The United States is at a critical crossroads. The world of today bears little resemblance to the recent past, and the world of tomorrow promises very different security challenges. While our military superiority seems unassailable, there is no guarantee that competitors will not emerge and put national interests at risk in the future. In the meantime the old world order has shifted, new nations have been born, non-state actors have become key players, economic power is ever more prominent, and technology is advancing at an increased pace. These dynamics have led to entirely new dimensions in the character of warfare. We are thus faced with transforming national security structures while not precipitously abandoning central military capabilities that have kept us secure over the last quarter century. We ignore this summons at the Nation's peril.

To help meet the challenge Congress passed the Military Force Structure Review Act of 1996 which required the Department of Defense to un-

The article was contributed by the National Defense Panel whose members are identified herein.

dertake "a comprehensive examination of the defense strategy, force structure, force modernization plans, infrastructure, budget plan, and other elements of the defense program and policies with a view toward determining and expressing the defense strategy of the U.S. and establishing a revised defense program through the year 2005."

The result of that effort was the *Report of the Quadrennial Defense Review* which was released in May 1997. It embraced *Joint Vision 2010* as a template for transformation and offered a strategy of shape-respond-prepare allowing for the near simultaneous conduct of two major theater wars as well as smaller scale contingencies. It assumed an annual DOD budget of $250 billion extended over time and recommended no major changes in the "above the line" force structure (divisions, air wings, Marine expeditionary forces, and carrier battle groups).

The Panel

As a follow-on to the Quadrennial Defense Review, Congress—in the same act that guided the review—mandated that an independent body known as the National Defense Panel undertake to further study strategies and structures to meet future challenges. In the words of this legislation, the panel should conduct "an independent, nonpartisan review of the force structure that is more comprehensive than prior assessments, extends beyond the Quadrennial Defense Review, and explores innovative and forward-thinking ways of meeting such challenges." Given the scope of the challenge and the panel's view that only an open and informed process can produce the correct solutions, this article describes our efforts so far to meet its charge and give a preliminary idea of the direction the final report will take.

we conceptualized outcomes that may characterize the world in 2020 (to free us from current paradigms)

The report of the National Defense Panel will be forwarded to Congress in December 1997. In recent months we have gathered information and deliberated on national security issues which the panel is charged to review. We traveled to Europe and Asia to meet with the commanders in chief, their staffs, and many of their subordinate commanders. At the same time we met with allied and regional leaders and got their ideas on the future of U.S.-regional relations.

In turn we met with senior DOD officials, the Chairman and Joint Staff, service chiefs, and leadership of the Reserve components; visited political-military exercises and wargames and listened to the findings of participating experts; and received briefings from future-oriented components of every service on various forward-looking concepts. We also conferred with the National Security Council, Department of State, and intelligence community. And we have consulted with members of Congress and their staffs.

Simultaneously we set our staff to work—augmented by experts and visionary thinkers drawn from various disciplines—to develop a process that analyzed global and regional trends across a range of political, demographic, economic, cultural, technological, military, and transnational phenomena. From that we conceptualized outcomes that may characterize the world in 2020 (a date far enough in the future to free us from current programs and paradigms).

We considered four hypothetical points in this range: a world much like today extrapolated forward to 2020; a more benign one in which stability and international cooperation are the order of the day; a world in which regional competitors

National Defense Panel

Philip A. Odeen [Panel Chairman]; President and CEO, BDM Corporation; served on the National Security Council Staff and the Defense Science Board

The Honorable Richard L. Armitage; President, Armitage Associates; served as both Assistant Secretary of Defense for International Security Affairs and U.S. Ambassador to the Newly Independent States

General Richard D. Hearney, USMC (Ret.); Managing Director, McDonnell Douglas-Europe; served as Assistant Commandant of the U.S. Marine Corps

Admiral David E. Jeremiah, USN (Ret.); President and CEO, Technology of Strategies and Alliances; served as Vice Chairman of the Joint Chiefs of Staff, and as commander in chief, U.S. Pacific Fleet

The Honorable Robert M. Kimmitt; Partner, Wilmer, Cutler and Pickering; served as U.S. Ambassador to Germany and as Under Secretary of State for Political Affairs

Andrew F. Krepinevich, Jr.; Director, Center for Strategic and Budgetary Assessments; served in the Office of Net Assessment, Office of the Secretary of Defense

General James P. McCarthy, USAF (Ret.); Olin Professor of National Security, U.S. Air Force Academy; served as deputy commander in chief, U.S. European Command

Janne E. Nolan; Senior Fellow, Brookings Institution; served with the U.S. Arms Control and Disarmament Agency and with the Senate Armed Services Committee

General Robert W. RisCassi, USA (Ret.); Vice President, L-3 Communications Corporation; served as commander in chief, United Nations and U.S.-ROK Combined Forces Command and as Vice Chief of Staff, U.S. Army

F–16 being cleared for take off.

U.S. Air Force (William B. Fallin)

Amphibious assault, Mogadishu.

U.S. Air Force (Joanna Seltzer)

increase in strength and introduce new challenges to global order; and a chaotic one in which instability, intense competition, and violence are the norm. In light of discernible trends and possible future worlds derived from them, we scrutinized various grand strategies that the United States could undertake to ensure its interests and goals were still attainable in the first half of the next century. Again we received advice from many experts and innovative thinkers both in and out of government. All this helped bring us to the central focus of determining what defense capabilities will be vital in the future.

Transformation Strategy

While we have yet to conclude the exact findings of our study, it has become increasingly apparent that a transformation strategy is needed to get beyond today's security structures to those the Nation will require by 2020. Though we are currently in a far more favorable strategic environment than during the Cold War because of a significant superiority over any prospective near-term competitor, the longer term is less certain.

transformation strategy is needed to get beyond today's security structures to those the Nation will require by 2020

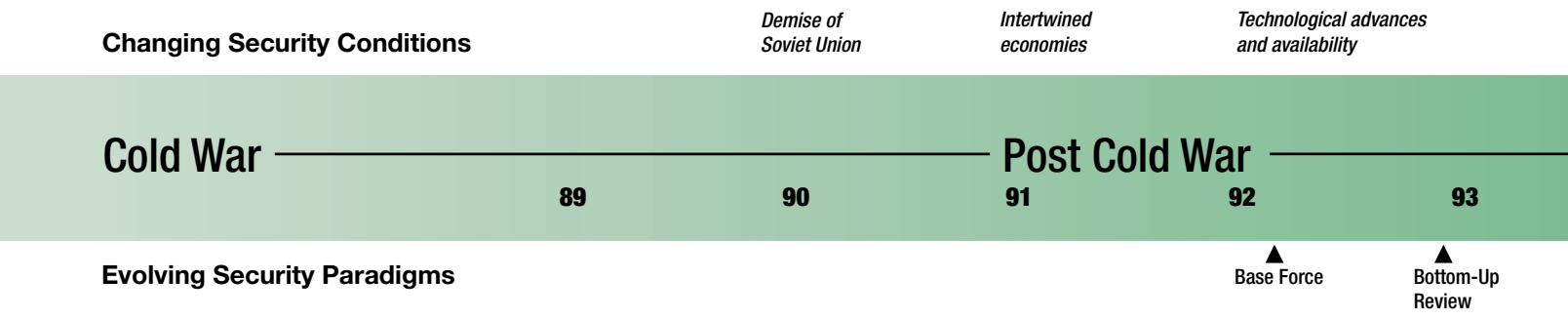
The challenge confronting the Armed Forces is not just whether they can win two nearly simultaneous major regional conflicts in the near term. It is whether the military—indeed the entire national security apparatus—can anticipate the nature of future wars and transform itself to prevent, and if necessary, win them. And in parallel, the military must be prepared to respond to situations short of war—from peacekeeping to countering terrorism—where its unique skills are required to support national security interests.

The future is unknowable. But that is no excuse for inaction. A more prudent course—the essence of a transformation strategy—is to experiment, develop diverse and sometimes competing operational concepts, make the necessary preliminary investments, and then play out the options. At some point when we can determine more precisely what our potential opponents are doing, how technology is developing, and where our key interests lie, we can reshape our forces and exploit those developments that promise success.

As the panel continues its deliberations on emerging challenges, the security structures that best deal with them, and barriers and enablers to a better strategic future, it will explore:

- the altered conditions of conventional, unconventional, and nuclear warfare in light of technological, cultural, political, and economic developments
- operations in space, to include making it more accessible while defending our assets and capabilities there and on the ground, and the potential for commercial integration and exploitation
- information systems and enhanced capacities of network centric computing which link disparate platforms and systems for synergistic effect
- power projection and counters which an enemy might invoke to limit our access and thus our strategic consequence

Meeting the security challenges of a new century . . . a decade of debate and evolution



- developments in urban warfare vis-à-vis demographic trends affecting growth and human profile of urban areas and the importance of cities as political, financial, cultural, and psychological centers of gravity
- transnational developments in organized crime, drug trafficking, resource scarcities, and the proliferation of weapons of mass destruction
- homeland protection against asymmetries such as chemical/biological terrorism and information/infrastructure attack
- the role of Reserve forces in enhancing U.S. security and interests at home and abroad.

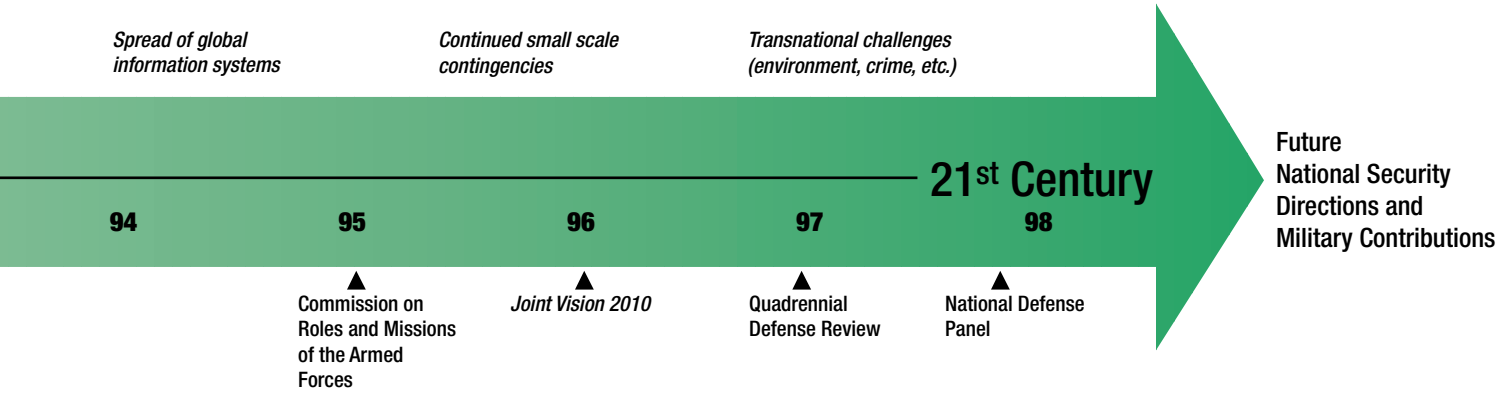
In short, we are considering the entire range of security issues, the changing character of war, the shifting balance of international power, and the increasing complexity of a security apparatus that extends well beyond the scope of traditional military concerns.

Enlarging the Debate

The panel understands that it cannot solve this array of issues by itself. It realizes that the change which may be in order must be informed by an intense debate that leads to correct policy decisions. But by formulating appropriate questions and proposing answers we hope to contribute to that debate. Those questions include:

- What does an era of dynamic strategic and technological change mean for future military capabilities?
- Which regions and global trends must be monitored to ensure change does not translate operationally into surprise?
- How should shaping opportunities and lesser conflicts be balanced with preparations and capabilities required to fight and win the Nation's wars?
- Given that the future is in many ways unknown and unknowable, how do we guarantee the agility and flexibility to adapt to changing conditions in time?
- How do we balance the ability to respond to contingencies with the experimentation and investments required to address tomorrow's exigencies?
- What changes should be made to insure that our national security apparatus (beyond DOD itself) be reorganized to better address contingencies and prevent future conflicts (or win should we fail to deter them)?

Ours is not an effort to size the force precisely and define its structure in detail. That is not possible given the uncertainties that we will confront twenty years out. Nor can we create specific plans for the experimental and developmental efforts required. Indeed, with appropriate political guidance, that is the responsibility of the Secretary of Defense, Joint Chiefs of Staff, and military services. The National Defense Panel can, however, establish the context within which to frame the defense component of 21st century national security. The panel hopes to enlarge the debate by addressing the scope, direction, and pace of change necessary while simultaneously preserving the essential structures to meet contemporary challenges. We hope to identify the kinds of capabilities that will make America as militarily strong in the 21st century as it was in the 20th century but with less risk and bloodshed. The panel aspires to contribute to a shift away from Cold War paradigms and toward a new national security consensus—one that will ensure the Nation's continued strength and role as a world leader. JFQ



The QDR Process—
An Alternative View

By JIM COURTER *and* ALVIN H. BERNSTEIN

These are hard times for those entrusted with crafting our national security strategy. The international environment has undergone the kind of profound transformation which ordinarily takes decades if not generations to unfold.[1] Strategists have had to adjust to a baffling number of challenges. In Iraq, Somalia, Haiti, Bosnia, Rwanda, and the Straits of Taiwan events did not fit neatly into familiar categories of demands on military power. Since 1989 circumstances that we thought could be ignored instead demanded attention, thus compelling the Nation to reassess its foreign and defense policies. Those charged with formulating policy have had to adjust quickly: from the Base Force and the Bottom-Up Review to the Quadrennial Defense Review (QDR). They still have a long way to go and so has the United States as a whole.

Until its final months, the Bush administration based security policy on the possibility that the disintegration of the Soviet Union might be reversed. To meet such a prospect, military leaders under the aegis of General Colin Powell developed the Base Force which was duly blessed by the Pentagon's civilian leadership.[2] The first Clinton administration, recognizing the Soviet collapse and watching Russia's fragmenting periphery, abandoned the notion of "reversibility" and with the Bottom-Up Review shifted focus. Instead of war on the plains of Europe, they envisaged a recurrence of conflict either in a still unsettled Persian Gulf or on the Korean peninsula. These are the two implicit major regional conflicts (MRCs) at the core of the Bottom-Up Review. Persian Gulf volatility and North Korean militarism make both conflicts plausible. Plausible too was the first Clinton administration's assumption that either conflict might trigger the other, especially if American forces appeared thinly spread. The possibility of war in Korea and the Gulf occurring simultaneously dictated the size and shape of our forces and in part still does.

Yet while this large-scale planning was going on the U.S. military became embroiled in one crisis after another which entailed deploying troops and spending money, not always to applause from an inward-looking Congress. During these years the Armed Forces were called upon to protect Iraqi Kurds who had fled to the Turkish border by enforcing a northern no-fly zone. In southern Iraq they had to enforce another zone to protect Iraqi Shiites. In 1992, in the face of feuding warlords, U.S. forces participated in an effort to feed starving Somalis. In Bosnia they enforced another no-fly zone, then conducted punitive strikes against Serb targets, and finally joined Implementation Force for Joint Endeavor to maintain peace on the ground. After flying tens of thousands of flights over Bosnia, however, the Air Force is still there as other forces remain on the ground. These are only the most conspicuous accomplishments, the "smaller-scale contingency operations" as the QDR report refers to them. These deployments, however, have compromised our ability to respond to two simultaneous MRCs.

Splitting the Difference

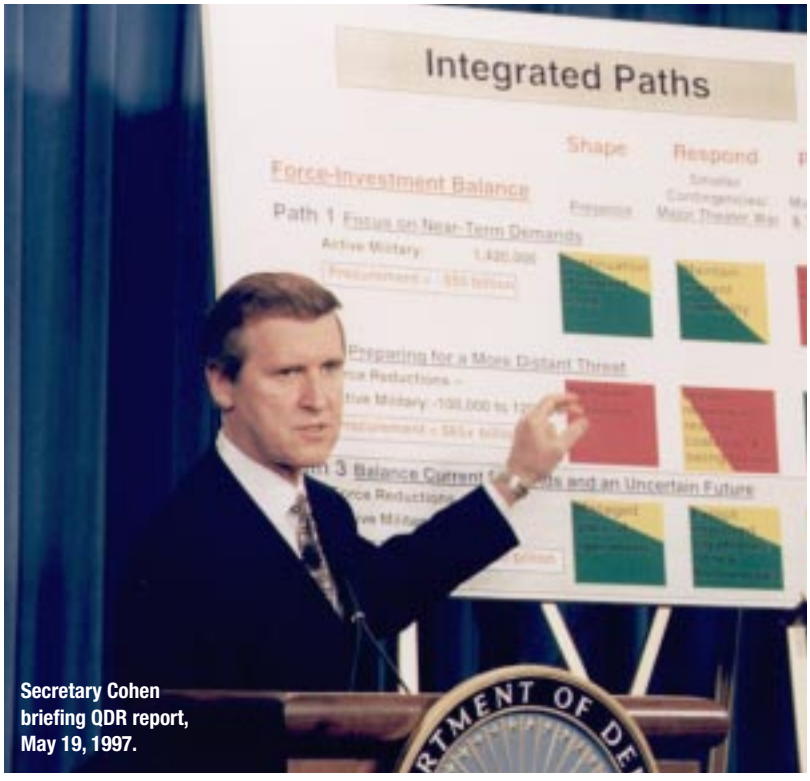
Six months into President Clinton's second term the Pentagon is once again trying to adapt strategic theory to reality. Under the guidance of Secretary of Defense William Cohen it has issued

Former Congressman Jim Courter, who chaired two rounds of base closings, now heads defense programs at the Alexis de Tocqueville Institution and Alvin H. Bernstein, founding director of the George C. Marshall European Center for Security Studies, is research professor at the National Defense University.

the much-anticipated QDR report. This comprehensive study, reflecting lessons learned since the fall of the Berlin Wall, has provoked an intense public debate over the shape of our foreign and defense policy.[3] Its greatest strength is its thorough and insightful analysis of likely future threats and of the capabilities the Armed Forces will need to meet them. The report's greatest weakness is apparent when it attempts to match the extensive obligations anticipated in the post-Cold War world with the diminished resources it recommends be allocated.

the report's greatest weakness is apparent when it attempts to match extensive obligations with diminished resources

In addition to the Gulf and Korean peninsula scenarios inherited from the Bottom-Up Review, the QDR report lists asymmetric attacks by nuclear, biological, and chemical weapons, information warfare, terrorist acts, and environmental sabotage. In light of recent experience, it also sees the need to retain the capability to field forces for smaller-scale contingencies that threaten chaos and that our elected leaders have required—such as peace operations and a panoply of humanitarian assistance operations.



Secretary Cohen briefing QDR report, May 19, 1997.

DOD (Helene C. Stikkel)

Given this environment and the enormous cost of preparing for every eventuality at once, the report established priorities. Its authors considered three options, although the report gives the impression that the first and second were framed to lead ineluctably to the third. First, they considered devoting limited defense funds largely to the development of a capability to counter residual short-term and mid-term post-Cold War threats. This approach has the significant drawback of mortgaging long-term security when rapid political change and, more importantly, accelerated technological development could introduce new security challenges within a decade or so. That alternative, therefore, could not stand. The second option emphasized preparing for the hazards of the long-term future at the price of reduced present security and of consequent high risk if the worst of foreseeable crises occurred. Since proximate threats are real, that alternative proved unacceptable as well. In the event the QDR report chose to split the difference between the two. This third option trades a limited reduction in both current defense capabilities and the ability to respond to short-term threats for the opportunity to invest in technology—the revolution in military affairs (RMA)—that would transform the Armed Forces over the long term to meet the challenge of an uncertain future.

Eventual Proliferation, Diminished Value

The authors of the QDR report are convinced that the United States must preserve its near monopoly of state-of-the-art technology and prepare for an RMA. Are they correct in view of the cost? Surely yes, because this is our forte. It served us well in Desert Storm, and we do not need to accept all the extravagant claims of what the new technologies will do to believe that nations which acquire key technologies and incorporate them in a coherent system—rather than use them to enhance their current capabilities—will enjoy advantages on tomorrow's battlefield.

The authors of the QDR report want to give the Armed Forces the technology that will discourage the re-emergence of a peer competitor such as China (if it learns to turn wealth into military power) or, failing that, to prepare for any challenges a competitor might present. While there is no such threat on the horizon, the dizzying rate at which defense technology is developing and the accessibility of commercial technology which has military implications will mean that potential enemies will be able to modernize their forces ever more quickly.

Whether a state or a coalition, a technological peer that shared our doctrinal sophistication and incorporated new technology in appropriate

RAH–66 Comanche.

DOD

Combat Camera Imagery (Marvin Lynchard)

F–117 stealth fighter.

operational capabilities would especially challenge our Armed Forces. Since the Mexican War the United States has had to project significant forces over great distances, maintain them abroad, and maneuver them effectively for extended periods to protect our interests and allies. The ability to do this may decline in the immediate future to the extent that forward basing shrinks for economic and political reasons. In the long run, an enemy that masters and integrates many new technologies could threaten this capacity. Improvements in target illumination, information management, and precision guided munitions will all be used to greatest effect in the open areas our forces must traverse to reach remote theaters of operations and against platforms—surface ships and manned aircraft—that get us there. That is why the Nation must for the foreseeable future maintain the ability to do what it does so well now: minimize the signatures of platforms as stealth technology does for B–2s and F–117s and amplify enemy platform signatures as do the data fusion capabilities of Aegis naval systems. Application of low-observables technology to new weapon systems is not solely the province of jet-aircraft designers: the Army is developing its first truly stealthy combat helicopter, the Comanche, and the new attack submarine is expected to be the stealthiest undersea warship in history.

The eventual proliferation of such technology will diminish its value to the Armed Forces. The report correctly aims at maintaining a lead in some of the most crucial areas while investing in developing counters to the technologies most likely to be used to our detriment. The revolution in military affairs, the report also reasons, will enable the military to rely even less on manpower and thus reduce casualties.

To maintain that lead, we must invest in certain key technologies. Exploitation of space, management of information systems, target illumination for both strategic and operational defense, and precision will confer decisive advantages. The possibility of low-tech responses to high-tech capabilities and the gradual evolution

F/A–18F Super Hornet.

U.S. Navy (Adam Plantz)

of technologies and their incorporation in a coherent system with appropriate doctrine suggest that it is time to begin investing in long-term capabilities. We cannot reject technology, and a core research and development strategy should focus on electronics (sensors, emitters, and microprocessors), nanotechnologies (microscopic mechanical and chemical devices), energy (photovoltaic, compact storage, and beam delivery systems), software (with an emphasis on software integration), and finally, as the report recommends, an industrial technology that will mass produce weapon components efficiently by working more closely with commercial industry so we can accommodate a production surge in an emergency.

the QDR report has it right: national security demands that we remain on the cutting edge of technology

Investing a Shrinking Budget

The QDR report has it right: national security demands that we remain on the cutting edge of developments in military technology. Budget limitations, however, also enter into the equation. The authors of the report have difficulty in reconciling defense priorities with the money they assume will become available. They should have tackled the risk of investing a large part of a shrinking budget in technology for the long term thereby shortchanging operational capabilities in the near term. Instead, they adopt a budget figure that seems appropriately modest and fudge on the dangers. The defense budget has declined by some 38 percent since 1985 and the report assumes it will stabilize at about $250 billion a year (in FY97 dollars) or 3.2 percent of GNP. Although such an allocation seems unlikely to meet the threats the report's authors foresee, they accept the figure passively, stating that they settled on it because "the Nation is unlikely to support significantly more resources for national defense. Indeed, we may yet face pressures to lower the DOD share of Federal expenditures. Under these circumstances, it would be unrealistic to build a defense program on an assumption that current resource challenges could be solved by increases in the DOD budget."[4] This may sound reasonable, but if the anticipated funding is inadequate for the tasks which the report assumes the military will perform, shouldn't the report say so? Shouldn't it explain which parts of the strategic vision can be implemented and which can't? One should expect the Pentagon to make tough choices, but DOD also owes an assessment of how much security $250 billion will buy and what

U.S. Navy (F.E. Zimmerman)

Port quarter view of *USS Alexandria*.

level of global leadership or participation it will support. The QDR report bows quietly to the budgetary limits it envisions, taking as an article of faith that the public will support only that designated level of expenditure. But on occasion the public has proved persuadable when the President and Congress presented the case compellingly along with the exigencies of the situation. Public willingness to make sacrifices in order to reduce the deficit demonstrates that Americans still have the discipline to choose long-term over short-term benefits. At present, however, no one in authority is making that case on defense.

The QDR report correctly notes that significant savings can be achieved within the existing defense budget through outsourcing, reengineering, and acquisition reform. Several groups have contended that over $10 billion could be saved annually by outsourcing support functions. Such savings will only materialize over the years as old structures and processes are dismantled, and so the adequacy of current defense spending must still be addressed.

The same is true of a QDR proposal for two additional rounds of the base closure process. After four such rounds between 1988 and 1995, about a fifth of our former Cold-War base structure has been designated for closure or consolidation. The QDR report proposes continuing the base closure process while extending it to realigning research and test facilities. Experience indicates, however, that it often takes years for the full savings potential of closures to be realized. Thus while savings from earlier rounds will continue to accrue it is improbable that new rounds would yield significant savings any time soon. Even if Congress reverses its recent decision and authorizes further closures, they would not be a panacea for present budgetary concerns.

Wielding the Axe

Assuming the Pentagon puts the provisions of the QDR report into effect, how much will come out of the current operational hide of the Armed Forces to pay for future technology? The Army will lose an added 15,000 active duty personnel and 45,000 Reservists. Because the number of divisions will remain at ten, these already hollowing units will become more hollow unless there is a plan, unaddressed in the report, for a massive reorganization of the Army such as is described in a recent controversial book.[5] The Navy will go from 128 to 116 surface combatants, lose 23 of its 73 submarines, and have procurement of F/A–18E/Fs reduced from 1,000 to 548. It will also have to give up 18,000 active personnel and 4,100 Reservists. Overall, the Marine Corps loses the least. It will take a modest reduction in personnel but retain its three expeditionary force capability and receive slightly fewer new MV–22 tiltrotor aircraft.

Even the Army and Navy should consider themselves blest, however. The Air Force will lose a whopping 27,000 active duty personnel, shift one active fighter wing into the Reserves, and get only 339 new F–22s instead of 438. In addition, it will acquire 13 joint surveillance and target attack radar system (JSTARS) aircraft instead of 19. Most disturbingly, the QDR report calls for no further production of the B–2 bomber, despite the findings of the deep-attack weapons mix study that additional B–2s could be decisive in halting aggression overseas. That the review's axe should fall most heavily on the Air Force is surprising given that service's performance in the Gulf War. Certainly the strategies for both MRCs are likely to be fought with variants of the strategy used in Desert Storm where airpower played a key role in winning if not ending the war. The low number of casualties in the air and on the ground was largely

due to rapid destruction of the enemy air defense system and infrastructure and to crippling its ability to sustain ground forces in the south. This is the kind of strategy Americans will most readily accept in conflicts where the Nation's interests are at stake but not its survival. Accordingly, airpower generally and stealthy aircraft in particular should continue to receive the highest priority, not only for MRCs but also to discourage regional aggression by a rogue state bent on dominating its neighbors. It is difficult to imagine any future deployment of U.S. forces—whether for peace operations such as Iraq, Bosnia, and Rwanda, or for a full scale conventional war—where the Air Force will not play a dominant role.

Taking QDR reductions together with others made since the end of the Cold War, active duty personnel will be cut by 36 percent, Reserve components by 29 percent, and DOD civilians by 42 percent. At the same time the national missile defense will remain on an accelerated research and development track because of executive and legislative branch decisions, with the objective of deploying a limited system as early as fiscal year 2000—perhaps an overly ambitious target date.

The review, then, sacrifices size for modernization. This choice may have been the least of all possible evils, but unfortunate consequences will follow. Reducing our forces still further will make it all the more difficult to reconstitute them in time to face an unforeseen emergency or peer competitor. It is hard to think of precedents for a democracy rapidly rebuilding its forces. Furthermore, personnel reductions, no matter how well staged, emit an unmistakable signal. Talented young men and women will almost certainly shy away from careers in an enterprise that is steadily shrinking in size and, therefore, in opportunities for advancement. The report notes explicitly that these cuts may not be the final ones: future pressures may lead to further budget reductions. That makes choosing the military as a future a risky prospect.

MOOTW detract from the ability to cover MRCs or counter unexpected aggression by a rogue state

More Than Mere Cuts

There are also operational consequences to these cuts. As the review acknowledges, the conventional conflicts we can envisage for the next decade will probably arise with as little warning as those of the last ten years. They will be, in the review's words, "come as you are" wars, which we will fight with forces already in uniform—that is to say with fewer than in the past.

Even the theoretical total available may well not be the actual number we can count on for combat. According to recent studies by the Rand Corporation, both smaller scale contingencies or military operations other than war (MOOTW) seriously detract from the ability of standing forces to cover MRCs or counter unexpected aggression by a rogue state.[6] Some 90 percent of all such smaller contingencies involve peacekeeping or peace enforcement, which often demands equipment, skills, training, and doctrine that differ fundamentally from those needed for conventional operations. Peace operations now require about 10 percent of Air Force flight hours (between 1991 and 1995, 800,000 hours were dedicated to operations such as protecting Somalis from starvation, Rwandans from tribal massacre, Iraqi Kurds and Shiites from Saddam Hussein, and various Bosnian ethnic groups from each other).

These operations place asymmetrical demands on subcommunities within the Air Force. While F–16s spend many hours patrolling no-fly zones, for example, there are many more F–16s available than E–3s, KC–10s, EF–111s, AC–130s, and EC–130s which in 1995 averaged between 88 and 280 hours per aircraft in support of peacekeeping while an F–16 spent 21 hours. RC–135s, in particular, gave 65 percent of their 1995 flight hours to peace support reconnaissance. Aircraft such as E–3s and EF–111s are actually more heavily committed to flying operational missions now than during the Cold War. They devoted 40 and 60 percent of their 1995 flight hours respectively to peace operations.

Pilots patrolling the skies over Iraq and Bosnia get less time to hone their combat skills as peacekeeping operations provide few chances for air-to-air combat maneuver or placing ordnance on target. The deterioration of combat skills of some of our pilots is already measurable. Add the cost and the wear and tear on aircraft, and the sometimes unprogrammed expense of these smaller scale contingencies becomes more apparent and troubling.

The Army is also increasingly committed to such tasks, which similarly hurts its combat skills and creates other problems. In addition to involvement in Iraq and Bosnia, for example, the service has become heavily committed in counternarcotics activities in both Mexico and Colombia and in controlling refugee flows from Haiti—when not actually reinstalling Haiti's democratically-elected government to power. It has also put troops on the ground for peacekeeping in Macedonia and Bosnia and worked with the United Nations to support elections in Cambodia. Because the many peace enforcement missions in a chaotic international scene increasingly

strain combat skills, they are likely to stir new debates within the Army and DOD generally. These will focus on issues such as the appropriate ratio of active to Reserve components, the distribution of light, heavy, and special operations forces, and the needs of maneuver versus fire support.

Peace operations will demand more restrictive rules of engagement and closer civil-military communications and cooperation than the individual services are likely to find congenial. Most of these operations do not play to strengths of the Armed Forces and demand a degree of doctrinal flexibility at odds with post-Vietnam military thinking as articulated first in the Weinberger doctrine and later in the Powell doctrine of overwhelming force which was validated in the Persian Gulf. The conventional mind is uncomfortable with scenarios that call for tighter civil-military links on the operational level, but that communication becomes necessary when political guidance cannot be stable or consistent because of rapidly shifting conditions on the ground. One need only remember Lebanon and Somalia to imagine what may lie ahead. We ought thus to reckon with the possibility of another round of strained civil-military relations.

The debate has, in fact, been institutionalized by the Military Force Structure Review Act of 1996 which established the National Defense Panel (NDP), a review group of formidable experts. In a thoughtful preliminary letter to Secretary Cohen, NDP Chairman Philip Odeen wrote that this group intends to examine, among other things, "whether there is insufficient connectivity between strategy, on the one hand, and force structure, operational concepts, and procurement decisions on the other." It suggests that the review's program decisions and priorities would benefit greatly if they were more tightly linked to a new comprehensive strategy and also that deepening strategic concepts warrant "a more aggressive redesigning of [DOD] infrastructure," presumably something beyond mere cuts in the services. The panel also faulted the review for not taking a sufficiently joint and combined view of the future and for preserving the dated service perspective on force structure. It believes the QDR report overemphasizes traditional force-on-force challenges at the expense of the potential danger posed by subnational entities.

The National Defense Panel has until the end of the year to shape its verdicts on the specifics of the latest Pentagon game plan into an official critique. The process will be crucial since the final DOD plan will guide security policy into the next century. Inevitably the panel will have to conduct its business against the charges leveled by well-intentioned critics or self-interested kibitzers since a spate of pre-QDR articles argued that current force structure cannot even support missions required by the Bottom-Up Review.[7]

The outcome of this effort ought to be precisely what the panel asserts: a much tighter link between strategy and the ability to implement it. Everything must be placed on the table—not just hackneyed allegations of waste but some of the pet projects of the Pentagon and Congress—even if that means treading on some VITs (very important toes). Not only the time but the opportunity has come as we determine how to maintain the most benign security environment that we have enjoyed since the outbreak of World War I. **JFQ**

NOTES

[1] Charles H. Fairbanks, "Introduction," *The National Interest,* no. 31 (Spring 1993), pp. 5–8.

[2] Sharon K. Weiner, "The Politics of Resource Allocation in the Post-Cold War Pentagon," *Security Studies,* vol. 5, no. 4 (Summer 1996), pp. 125–42.

[3] See, for example, the press release by the Center for Strategic and Budgetary Assessments, May 19, 1997, and John Hillen, "Kicking the Can Down the Road," *The Washington Times,* May 29, 1997, p. A–16.

[4] William S. Cohen, *Report of the Quadrennial Defense Review,* May 1997, p. 19.

[5] Douglas A. Macgregor, *Breaking the Phalanx: New Design for Landpower in the 21st Century* (Westport, Conn.: Praeger, 1997).

[6] Jennifer Morrison Taw and John E. Peters, *Operations Other Than War: Implications for the U.S. Army* (Santa Monica, Calif.: The Rand Corporation, 1995); Alan Vick et al., *Preparing the U.S. Air Force for Military Operations Other Than War* (Santa Monica, Calif.: The Rand Corporation, 1997).

[7] Dov S. Zakheim, "Tough Choices in Defense," *The National Interest,* no. 47 (Spring 1997), pp. 32–43; Frederick W. Kagan and David T. Fautua, "Could We Fight a War if We Had To?" *Commentary,* vol. 103, no. 5 (May 1997), pp. 25–29; Zalmay Khalilzad and David Ochmanek, "An Affordable Two-War Strategy," *The Wall Street Journal,* March 13, 1997.

Whatever Happened to Defense Industrial Preparedness?

By IVARS GUTMANIS *and* JOHN F. STARNS

U.S. Army

Normandy, 1944.

The basic American approach to international crises is nonmilitary, with resort to the use of force arising only when vital interests are directly endangered. This approach is reflected in the way the Armed Forces are armed and equipped. Traditionally, the United States has not procured war matériel from an extant dedicated arms manufacturing base. Instead, it has mobilized industry to produce the means to fight the Nation's wars.[1] Moreover, mobilizations have customarily been directed by civilians, with military officers playing a relatively minor role.

Mobilizing for War

Although World War II is the best known industrial mobilization of the past century, it is only one of five episodes that offer lessons for policymakers and military planners. World War I taught that mobilization required sound planning and that a simple system of priorities can guide an effort until complex institutions are needed. In World War II the Nation learned that a rapid mobilization could not be achieved from a standing start without prior planning. Emergency organizations and controls must be in place. Korea was the first conflict that America fought without a declaration of war and for which it attempted to mobilize by expanding capacity. Then Vietnam demonstrated that in avoiding the short-term costs of mobilization readiness could be eroded. Finally, the Gulf War revealed that industrial preparedness must be considered in each and every scenario. Planning for the worst case does not assure readiness for lesser crises.

The concept of industrial mobilization used in World Wars I and II served the United States reasonably well but was found wanting after the ordeal of the Korean War. The major problem was

Ivars Gutmanis is an industrial economist with the Hobe Corporation and John F. Starns directs the industrial resources department at The Analytical Sciences Corp.

Figure 1. Domestic Sources of Defense Matériel by Type

	1992	1996	2010
aircraft			
bombers	3	2	1
fighters	5	4	2
helicopters	4	4	2
related matériel			
ballistic missile defense	6	4	3
expendable launch vehicles	3	2	1
satellites	5	4	3
rocket motors	8	8	3
strategic missiles	1	1	1
tactical missiles	8	8	8
tracked vehicles			
tanks	1	1	1
armored personnel carriers	8	8	4
munitions			
small caliber	5	5	3
cannon caliber	5	5	3
scatterable mines	2	2	1
pyrotechnics	1	1	1
bombs	4	2	1
mortars	3	2	1
artillery caliber	4	4	2
propelling charges	2	2	1
fuses	22	13	8
dispenser munitions	2	2	2
naval guns	1	1	1
tanks	3	3	2
demolition, grenades, mines	8	5	2
rockets/warheads	4	3	2

Source: Defense Logistics Agency.

the lead time required to get matériel to the field. Korea provided ample evidence of the problems with a mobilization-only policy. In late 1952 the Advisory Committee on Production Equipment (Vance Committee), recognizing the need for a more cost-effective industrial base than the policy of the day, recommended that "a larger productive capacity to produce military end items must be created . . . [so] that it can be quickly expanded in the event of an emergency by merely adding manpower and hours of operations."[2] As a result, the Nation adopted a mobilization base concept that remains in force today. Under defense mobilization order 23 of November 23, 1952, the Director of Defense Mobilization defined that base as,

that capacity available to permit rapid expansion of production sufficient to meet military, war-supporting essential civilian, and export requirements in the event of a full scale war. It includes such elements as essential services, food, raw materials, facilities, production equipment, organization, and manpower.

The resulting DOD program was predicated on the idea that industrial mobilization planning had to identify potential capacity shortages and propose corrective actions. It had several elements which included mobilization requirements, lead time, domestic production, and commercial conversion.

Mobilization requirements. The need to mobilize assumed the possibility of war in Europe between the United States and Soviet Union. While operational planning was conducted for lesser contingencies, the NATO scenario—considered by policymakers to be the most demanding—was used for industrial preparedness planning. Whether influenced by circumstance or choice, it was thought that in preparing for the worst-case scenario all lesser scenarios would be accommodated.

Mobilization lead time. Transition from peace to war could occur in days instead of weeks or months. Thus the industrial base could do little to meet immediate demands for production.

Domestic production sources. The United States could only rely on domestic production. Industrial preparedness planners were required to establish domestic sources for critical matériel.

Commercial conversion. Demand for defense-unique matériel would require a large-scale conversion of commercial production to defense production.

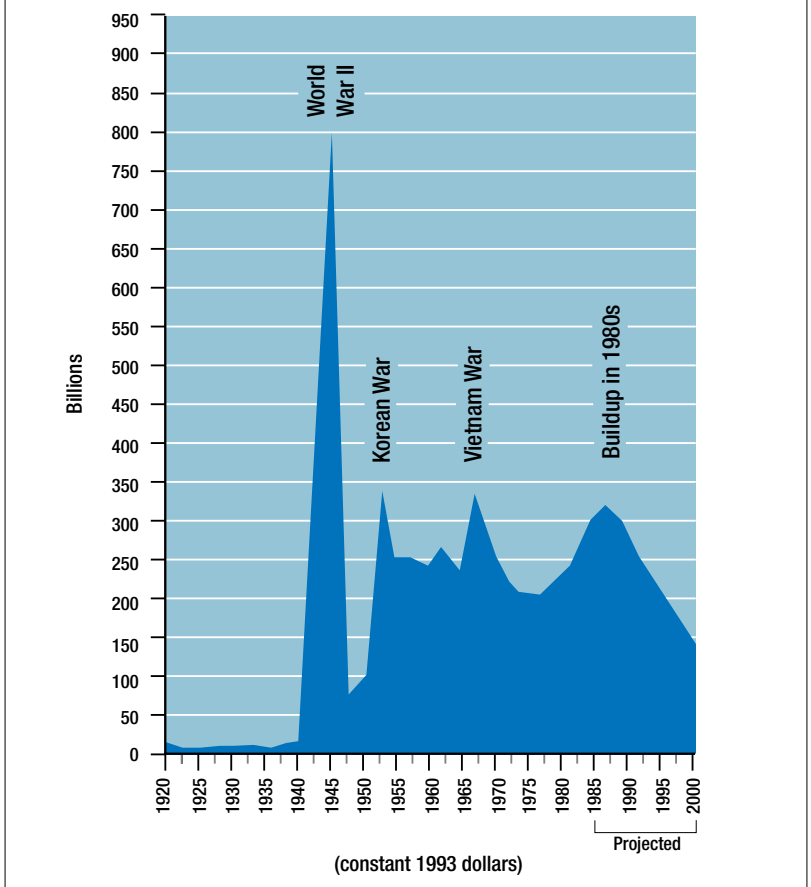
The industrial preparedness program was the keystone of industrial mobilization and would remain in force with some modification until the early 1990s. It was maintained by civil servants in DOD and other agencies. The ultimate beneficiaries of the program—the Armed Forces—played only a marginal role in its operation.

the breakup of the Soviet Union also has led to changes in DOD industrial mobilization policies and funding

Current Trends

The obvious but as yet incomplete collapse of Soviet military power has radically altered our political, economic, and defense policies vis-á-vis an arch-enemy of some fifty years standing. The breakup of the Soviet Union also has led to changes in DOD industrial mobilization policies and funding for industry-related activities and programs. As the Bottom-Up Review clearly stated, "the threat that drove our defense decisionmaking . . . is gone." Indeed, the determining aspect of the current defense procurement environment is a reduced budget (see figure 2). During the 1980s an-

Figure 2. Annual Defense Expenditures, 1920–2000



Source: International Institute for Strategic Studies, 1994.

nual defense spending averaged some $306 billion; in 1989, the peak year, it was $327 billion. For FY97 it is estimated at $274 billion, and further reductions have been debated in Congress and elsewhere. Conversely, some call for an increase of $50–60 billion over the current $39 billion.

Present and anticipated cuts in defense spending have precipitated changes in procurement, among them canceling development programs for new systems and reducing procurement. In fact reductions in weapons acquisition began in the mid to late 1980s. Since 1985 DOD has terminated over one hundred programs, including the Navy A–X attack aircraft and EA–6B electronic warfare aircraft, the Air Force F–16 fighter, the Army multiple launcher rocket system, and the follow-up early warning system. Moreover, procurement of other systems also has been reduced, including the Air Force B–2 bomber and F–22 air superiority fighter, the Army Comanche helicopter, and the Navy F/A–18E/F strike aircraft.

The effects of reduced budgets on procurement are also indirect. One may be abandoning the strategy to fight two nearly simultaneous major regional conflicts. Such a change is likely to come only after the completion of the Quadrennial Defense Review, but if adopted it could further reduce defense expenditures related to the industrial base.

On the other hand, a diminished threat certainly has not rendered military power obsolete. Nor has threat reduction created harmony within the community of nations. On the contrary, actual and potential conflicts among both small and large nations have escalated. Such situations threaten our security interests and increase the likelihood of military operations. A few years ago there was little or no indication of U.S. troops being deployed to Bosnia. Clearly superpower confrontation has been replaced by a nebulous mix of nonspecific contingencies—in a word, uncertainty.

The White House and Pentagon have taken initiatives to maintain a defense industrial base in the face of spending cuts and policy changes. In June 1993, the Under Secretary of Defense for Acquisition articulated four policy objectives for the defense-related industrial base:

- supplying and equipping the force to meet national security objectives, policy guidance issued by the Secretary of Defense, and the future-years defense programs
- sustaining production, maintenance, repair, and logistics for military operations of various durations and intensities
- maintaining advanced R&D to ensure technological superiority
- reconstituting within a reasonable period the capabilities to develop and produce supplies and equipment to prepare fully for a war, national emergency, or mobilization.

To assure compliance, DOD made two radical changes that have resulted in a new procurement paradigm: regulatory reform and dual-use policy. These changes will directly involve the military in defense procurement and related decisions.

Another equally important development—external yet impacting on defense acquisition—is the technological transformation of areas such as design, engineering, prototyping, and production of weapons systems and equipment. Taken either individually or collectively, these developments will impose new and crucial procurement-related responsibilities on the military.

Regulatory Reform

Many impartial experts charged that the defense acquisition process is cumbersome and that DOD contract management and administration

costs could be significantly reduced. The Pentagon has concurred in this judgment and implemented a major effort to reform procurement. To do this, DOD has changed policies and issued regulations that include personnel from outside procurement circles with experience in employing fielded weapons and equipment into the acquisition process. For example, the Secretary of Defense issued guidance in 1995 that requires procurement activities to be conducted by integrated product and development (IPD) and integrated product teams (IPTs). These teams include military personnel—the actual or ultimate users of the matériel being procured. In the Secretary's own words, "In the oversight and review process . . . IPTs would be vertically integrated in that they would be comprised of members from various staff and line levels."[3]

A number of specific initiatives will place the military squarely in the procurement process. One requirement calls for using so-called nondevelopment items (NDI).[4] Under NDI procedures the role of the military in acquisition is substantially increased. Another requirement involving the direct participation of military personnel rather than acquisition specialists in procurement comes about with increased use of a multiple award schedule. This requires the military to select the most appropriate items from a catalog of commercial goods to meet their operational needs. In the past military personnel represented only 6 percent of the over 178,000 engaged in procurement.

Such initiatives will greatly increase both the presence and role of the military in the defense acquisition process. However, the policy that demands the most active participation by both staff and line warriors is the dual-use technology and production concept.

Dual Use

The dual-use technology and production concept is one of the prime goals of procurement reform. As stated in the DOD "bible" on dual use:

The DOD's acquisition reform effort seeks to bring about a simplified commercial-style procurement system that gives priority to acquiring commercial products and processes, and wherever possible eliminates those unique contracting, technical, and accounting requirements that form a barrier to greater military/commercial integration. Toward that end, on February 24, 1994, Secretary of Defense Perry set forth a dramatic vision for simplification of the way the Pentagon buys military systems.[5]

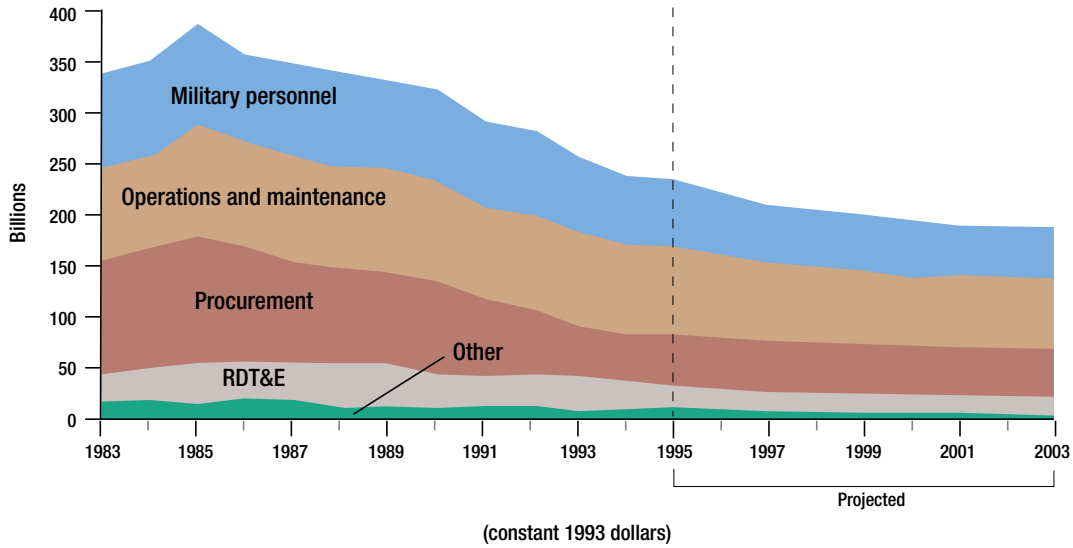
F/A–18E.

McDonnell Douglas

Multiple launch rocket system.

DOD (Helene C. Stikkel)

Figure 3. DOD Budget Forecast by Category, 1983–2003



Source: *The New York Times* and International Institute for Strategic Studies.

As part of the mandate, on June 29, 1994 the Secretary directed the services to use performance and commercial specifications and standards instead of military ones unless no practical alternatives exist. Those rare cases would require explicit approval, a reversal of prior practice.

Applied to dual-use strategy this innovation represents a new way of doing business. DOD intends to remove the barriers between commercial and defense industries and institute compatible development and acquisition processes. An integrated national industrial capability that achieves "world-class" benchmarks for cost, quality, and cycle time will allow the Pentagon to exploit the rapid rate of product development and the market-driven efficiencies of commercial industry.

Commercial manufacturing processes will lower product costs through economies of scale resulting from mass production as well as economies of scope from repetition of processes across families of lower-volume products. Moreover, if advanced technologies are adopted and improved by commercial firms, military systems will also benefit. Finally, by strengthening those elements of the economic infrastructure on which DOD depends, successful commercialization of defense technologies can increase the likelihood that they will be accessible and affordable for military use.

Dual use, with its accompanying benefits, calls for technical judgments on the applicability of items to defense needs. In fact an item has not become dual-use until such a decision is rendered. For some major dual-use procurement the previous acquisition process will be applied. For a large portion of goods and services procured under the dual-use provisions the purchasing activity will take place in the field, and the responsibility for accepting or rejecting such items will rest with military personnel. The possible workload for such activities under the dual-use policy is great. This may be seen from the anticipated level of DOD procurement shown in figure 3.

The concept of dual-use in defense-related production, services, and procurement presents attractive policy because of advances in the agile manufacturing technologies. These gains render the dual-use policy exceptionally applicable to future defense needs for matériel and services.

Agile Manufacturing

The rapid increase in the technology and use of agile manufacturing allows DOD to acquire matériel when needed and at a reasonable cost. Agile manufacturing is a generic term for a number of competition-enhancing initiatives that include lean and flexible factories, networked information systems, and cross-boundary communications throughout and among various value chains.[6]

The vision was first described by the Agile Manufacturing Enterprise Forum held in 1991.[7]

Northrop

B–2s under construction.

Agility is the capacity to flourish in periods of uncertainty, unpredictability, and recurrent change, and agile manufacturing is the integration of technology, management, and workforce resources in a coordinated, interdependent system. Under such a system information flows seamlessly among manufacturing, engineering, marketing, purchasing, finance, inventory, sales, and research units. It also courses unbroken between agile manufacturers and their suppliers and customers.

agile manufacturing can overcome emerging problems in an era of uncertainty and reduced funding

Agile manufacturing assists defense planning as well as the procurement of defense-related goods. In addition, it can overcome emerging problems facing procurement management in an era of uncertainty and reduced funding.

Since the end of the Cold War, the United States has struggled to define the dimensions of the future threat. Absent a specific enemy or zone of conflict, mobilization planners do not know whether to focus on desert, arctic, or tropical warfare. Nor do they know whether they will need battalions or corps. Since agile manufacturing solutions are designed for such uncertainty, they are ideally suited as the framework for evaluating industrial responsiveness.

One aspect of agile manufacturing is virtual enterprise, which brings together personnel and equipment from several companies to design and manufacture a product. Suppliers, contractors, and customers work together. Lead times are cut by the order of magnitude. Another contributor is information technology, which permits rapid exchange of requirements and capabilities among vendors on all levels of the supply chain.

Since agile manufacturing strives for highly customizable products and rapidly configurable production processes, it erases distinctions between the defense and commercial industrial

bases. Current dual-use strategy states that "future weapons systems must be consciously designed to use state-of-the-art commercial parts and subsystems and to be built in facilities with integrated military and commercial production lines."[8] Advocates do not claim that armored vehicles and commercial trucks will be manufactured on the same production line; but they believe components of military-unique items such as engines can be produced in conjunction with commercial equivalents. But the dual-use vision is limited to a stationary manufacturing process which, even when augmented by flexible systems, operates within a relatively narrow range of product options. The agile solution extends the bounds of dual-use strategy by creating a production environment that permits rapid metamorphosis of manufacturing resources where individual tools and workstations can be resized and regrouped to respond to customer needs in near real time.

The defense industrial base has played a critical role in national security strategy because of its ability to design, develop, and manufacture technologically superior weaponry which provides the Armed Forces with formidable capabilities. As budget cuts affect force structure, they will also impact on the defense industrial base. The Clinton administration has taken steps to maintain an adequate industrial base in the face of declining budgets. Some will change long-established rules and patterns of defense procurement, especially regulatory changes and dual-use policy.

To a significant extent, success in acquisition reform depends upon the active participation of military personnel in procurement. This is possible only with an understanding of new policies and elements of this reform. Equally critical is familiarity with radical advances in manufacturing technology as well as agile manufacturing and its relationship to another key element of acquisition reform, the DOD dual-use policy. Agile manufacturing seeks to reduce response time and increase manufacturing flexibility so that every customer order can be satisfied. Ultimately it would mean that the industrial base would never have to be mobilized. The potential of agile manufacturing will only be fully realized with the participation of the users—the Armed Forces. **JFQ**

NOTES

[1] Industrial mobilization is defined as "the process of marshaling the industrial sector to provide goods and services, including construction, required to support military operations and the needs of the civil sector during domestic or national emergencies. It includes the mobilization of materials, labor, capital, facilities, and contributory items and services." See DOD Instruction 5000.2, *Defense Acquisition Management Policies and Procedures*, February 23, 1991, p. 15–7.

[2] Office of Defense Mobilization, Advisory Committee on Production Equipment, *Production Capacity: A Military Reserve* (Washington: Government Printing Office, January 1953), pp. 1, 29.

[3] Memorandum from the Secretary of Defense, "Use of Integrated Products and Process Development and Integrated Product Teams in DOD Acquisition," May 10, 1995.

[4] For a further discussion, see P. David Leech and Ivars Gutmanis, "NDI Procurement Accounting and Tracking: Options and Implementation Plan, for the Office of the Deputy Assistant Secretary of Defense (Production Resources)," report TR–5856–E (Arlington, Va.: The Analytical Sciences Corporation, December 1993).

[5] Department of Defense, *Dual Use Technology: A Defense Strategy for Affordable, Leading-Edge Technology* (Washington: Government Printing Office, February 1995), p. 16.

[6] Michael E. Porter, *Competitive Advantage* (New York: The Free Press, 1985). Porter uses the term to describe a way to disaggregate a firm into its strategically relevant activities to understand the behavior of costs and sources of differentiation.

[7] Agile Manufacturing Enterprise Forum, volume 1, *An Industry-Led View: 21st Century Manufacturing Enterprise Strategy*, and volume 2, *Infrastructure: 21st Century Manufacturing Enterprise Strategy* (Bethlehem, Pa.: Lehigh University, 1991).

[8] Under Secretary of Defense for Acquisition and Technology, *Dual-Use Technology: A Defense Strategy for Affordable, Leading-Edge Technology* (Washington: Department of Defense, February 1995), p. 4.

The Sisyphus Paradox: Framing the Acquisition Reform Debate

By LINDA S. BRANDT *and* FRANCIS W. A'HEARN

Sisyphus, king of Corinth, was an intriguing mythological figure banished by Zeus to the nether regions of Tartarus. There he was condemned for eternity to push an enormous stone uphill only to have his strength fail near the summit and the stone roll back down. His plight serves as a lesson for efforts to streamline the way arms and equipment are developed and acquired.

Defense acquisition—or procurement as it is commonly known—is the process whereby the services avail themselves of the technological innovations and capabilities in the industrial base through expenditures of national treasure—a process that continues to consume a significant share of discretionary Federal spending. Various proposals are being considered that could streamline the system in which this process operates. Like Sisyphus, the government has repeatedly tried to reform the acquisition process only to find the stone rolling back. Though we rightfully pursue reform we ironically do so in a system which, by the express intent of the American body politic, was not designed for efficiency. This is the Sisyphus paradox of acquisition reform and is found in a number of precepts which both frame and illuminate an ongoing debate.

These maxims provide a perspective on a policy dialogue too often bounded by exaggerated claims or hopeless resignation. Some are lessons which were learned but seemingly overlooked or forgotten by policymakers and practitioners who are occasionally lulled into thinking there is little real difference between public and private sector practice. The debate and any meaningful reform accruing from it will be best served by reconsidering these factors. Effective reform must occur in the context of the governmental system in which it operates. To grasp the structural impediments is to ease the way for critical changes.

The System

The defense acquisition process is firmly rooted in our system of government. Like the institutions of which it is part, it is based on shared power and checks and balances. Congress, the White House, the Pentagon, and the services have vested interests and strong influences which are exercised through the power and constraints imposed by oversight, direction, security needs, and fiscal wherewithal. The judicial system also plays a role, with courts hearing a range of challenges from small contract complaints to multi-million dollar claims against the government (such as the Navy A–12 aircraft program). As one observer noted, acquisition begins with the "simple truth that soldiers, policymakers, technicians, and politicians all have a right to some say over weapons acquisition."[1] The paradox is that since each stakeholder exerts only partial control over selected parts of the process no one controls all of it.

Decisions to initiate major new projects in research, development, and production may be driven by a variety of perceived threats, military necessity, technological opportunity, or defense

Linda S. Brandt and Francis W. A'Hearn both teach at the Industrial College of the Armed Forces.

contracts in congressional districts, but the ultimate decisions about weapon systems are political. President Ronald Reagan's resolution to embark on the Strategic Defense Initiative is a noteworthy case, but so is the Trident, which was shaped by the SALT negotiations, a national election, and influential personalities as much as security concerns. According to one argument, such decisions incorporate the pluralist paradigm wherein "political outcomes reflect the pulling and hauling of a multitude of interest groups."[2] As with policy choices in virtually any other area of government, weapon systems and military force structure are fundamentally political outcomes.

The defense acquisition system was designed with many goals in mind, but efficiency was not one of them, and notwithstanding public protestations to the contrary this is precisely how the American body politic would have it. How can this seeming paradox be?

Historically, whenever the Federal Government has sought to purchase goods and services from the private sector, safeguards have been put in place to ensure that all bidders can compete for business. Equity and equal access are goals of the defense acquisition system, and no corporate giant or small business seeking to contract with the government would have it any other way.

Certainly there are other goals. Military capability and national security are most assuredly primary cornerstones of the system. The Aegis cruiser, SR–71, and multiple launch rocket system were clearly products of broad-based national security requirements and technological opportunity. Affordability is a consideration with the B–2 bomber (as are questions about threat and mission). The new joint strike fighter seeks to fulfill needs across all the services and at least one European country. Thus performance, cost constraint, and joint and combined interoperability are legitimate aims of the system. As one official has suggested, "The current system is not broken. It is well designed to accomplish the goals that the Nation values . . . [but it] represents trade-offs among competing, often contradictory goals and, not surprisingly, works imperfectly as a result."[3] It is imperfect. Efficiency is not an inherent or explicit feature of the acquisition system. Thus when the Pentagon proposed rules in mid-1996 under which contracting officers could bargain only with vendors they judged to be most competitive, industry reacted with caution if not skepticism. As an officer of a large aerospace manufacturer explained, "This is a sea change in how we do business with the government, and we don't want to sacrifice fairness in the pursuit of efficiency."[4]

performance, cost constraint, and interoperability are legitimate aims of the acquisition system

USS Arleigh Burke, first of its class with Aegis system.

U.S. Navy (James R. Giusti)

This element of the debate also belies a phenomenon which is more unique and appropriate to peacetime. Questions of efficiency were not part of the debate over the Manhattan Project or the effort to orbit an American satellite after the Soviet Sputnik launch in 1957. Questions about the taxpayers' return on investments clearly and rightfully were part of the discussions connected with canceling the A–12 program—particularly after the fall of the Berlin Wall. Thus just as Sisyphus was condemned to eternally roll the stone up the hill, the stewards of the public trust are obligated every day and in every way to improve effectiveness and efficiency—in a system designed for the former but indifferent to the latter. In fact, to do less would be unethical if not criminal, barring the issues of national survival or sovereign interests. Nonetheless, it is good to realize that priorities and demands shift over time. Cost, schedule, and performance are traditional criteria by which we judge success in weapons development. Of these three factors, however, performance tends to dominate the most when we are

planning for war (the ability of systems to overcome a potential enemy held sway throughout much of the Cold War). In time of conflict, program schedules tend to overshadow other considerations (such as quickly modifying and fielding the Patriot during the Gulf War). In prolonged periods of relative peace (the current situation) cost becomes dominant.

Yet another paradox exists in this area. While the system is indeed designed for equity and equal access, rules governing acquisition create a procedure so complex that it raises barriers which can block competition. In fact, despite objections to the contrary, defense contractors entrenched in the current system have only a limited interest in changing it. As long as this situation exists, DOD cannot expect to attract new technology-rich firms to the defense arena.

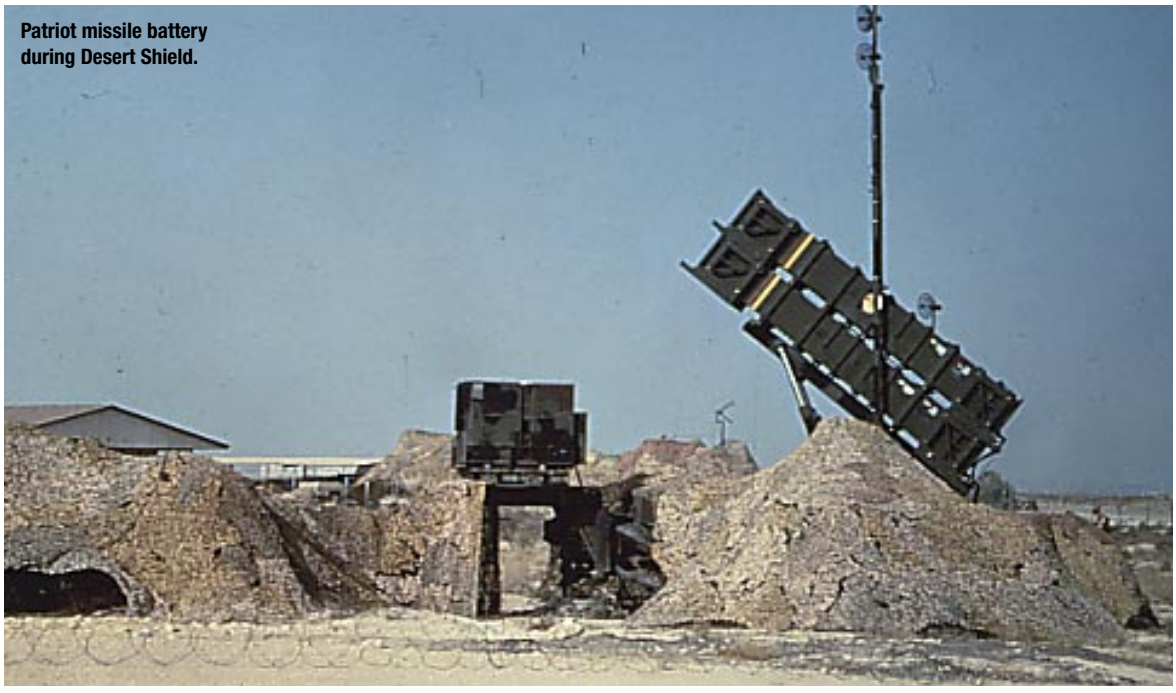
Acquisition Bashing

Critics of the way the bureaucracy acquires systems and equipment have been fixtures on the scene since the last century. Historically, some of their charges have been well founded while others only make good headlines. Serious investigations were conducted into war profiteering in the wake of World War I. Over the years critics have debated cost reimbursement and fixed-price contracts. From the Hoover Commissions (1949 and 1953) to the Fitzhugh Commission (1970), Grace Commission (1983), Packard Commission (1985), and Federal Streamlining Act (1994), review boards and investigative panels under both Democrat and Republican administrations have sought to eliminate excesses—real and imaginary—in government and defense acquisition.

Most reform initiatives have been nobly motivated and have enhanced the system. They are likely to influence the future political military landscape. But these same efforts rest uneasily on an implicit and potentially misleading foundation. In fact, each suggests that if we look hard enough, if we can muster sufficient creativity, a silver bullet will correct the ills of the system. But no such solution exists in a democracy. Commercial practice and other initiatives, however well conceived and intentioned, must function in a system based on public money, accountability, and trust.

Conventional wisdom depicts the defense acquisition system as comprised of three systems that include the requirements process; the planning, programming, and budgeting system (PPBS); and the acquisition management system, which maps development phases and progress milestones from concept exploration through validation, engineering, production, deployment, and support. These systems are often portrayed as intersecting like three interlocked circles in a Venn diagram. In reality they do not intersect at all; they collide.

The systems clash because they are driven by wholly different and potentially incompatible forces. The requirements process involves a threat and technological opportunity. PPBS is based on both time—the Federal budget calendar review



Patriot missile battery during Desert Shield.

DOD

cycle—and resource allocation. The acquisition management system is based on milestones and approvals subject to progress, real or supposed.

The paradox is that these otherwise incompatible systems must work together for reasons which become equally clear when one examines their intended outcomes. The requirements process helps determine what we will buy and why. PPBS governs how much or how many we will produce. Finally, acquisition management shapes how we will actually develop these capabilities.

Yet another paradox associated with the defense acquisition system involves organizational structure and management practice. The system reveals a sort of organizational schizophrenia. The defense establishment, like nearly all elements of the Federal Government, is structured as a large functional bureaucracy based on familiar models which grew out of the industrial revolution. By the 1960s, however, government and private industry began to discover the virtues of project management as a structure and approach for realigning functional experts into a dedicated team on programs like the Apollo, Polaris, and F–15. An unwillingness to disband functional organizations and home base of expertise from whence team members came, however, kept existing management structures in place. Thus in the 1970s and 1980s one saw both functional and project management preserved simultaneously in various management schemes.

stringent congressional oversight of the annual defense budget is not likely to abate

Today integrated product teams are being formed across the defense acquisition community (and private industry) for project management and oversight. Like their historical antecedents, they offer the virtues of dedicated project management teams but again are often superimposed on extant functional organization structures which are never dismantled. In the final analysis, both integrated teams and functional bureaucracies work in an uneasy structural alliance by the efforts of dedicated people in what is arguably a schizophrenic paradigm for both organization and management.

Big Money, Big Results

In the contemporary environment of downsizing and dramatically reduced defense budgets, defense acquisition projects claim sizable portions of the investment in national security. Current long-range projections for the joint strike fighter, for instance, place the total value of that program at three-quarters of a trillion dollars—the largest in American history. Suffice it to say that by any reasonable standard enormous resources and a relatively large share of the budget pass through the defense acquisition system, which is highly visible in the economy. The consequences attendant to these sums are far-reaching. Congress, taxpayers, and the media all rightfully demand to know how public funds are spent. At the same time, expenditures and creation of jobs in various regions form powerful interests that determine where the funds go. Thus stringent congressional oversight of the annual defense budget is not likely to abate. This is a structural reason why reforms that involve congressional prerogatives are frequently difficult to implement.

Contractors are also powerful players. They are motivated not only by domestic markets but the desire to expand internationally. Moreover, investment in the defense sector has historically spun off innovations with benefits for society—such as surgical lasers and audio electronics, anti-skid brakes for vehicles, jet propulsion for commercial aviation—although there is conjecture about the reverse phenomenon as commercial electronics, for instance, outpace military investments in that area. Considering the technological breakthroughs derived from military research during World War II—radar, sonar, jet propulsion, nuclear fission—it may not be unreasonable to ask whether market forces in the private sector are likely to add analogous technological breakthroughs in the 21st century absent public funding. In short, the sizable flow of dollars through the national acquisition system yields a paradox of both promise and peril which constitutes another facet of the defense acquisition policy debate.

Despite persistent charges that the defense acquisition system is catastrophically broken and in need of being recreated, another quiet but powerful paradox is apparent. This system continues to produce the world's most effective and lethal systems. U.S. weapons are world class, generally highly praised by warfighters, and much in demand within the global arms marketplace. These are not surprising outcomes for a system based more on effectiveness than efficiency.

Will we continue to produce world class systems? Can we afford them in the future? How will we specify our requirements in the face of ambiguous yet real threats? How persuasively will we articulate such needs in a budgetary climate in which defense and social priorities vie for finite resources? These issues represent aspects of the context of acquisition reform. How we address them is part of the challenge for policymakers and practitioners alike.

U.S. Air Force (Fernando Sema)

Virtual reality research.

Future Warfare

A final paradox deals with the relationship between acquisition and warfare. It is based on the precept that conflicts in the next century will not be so much a matter of future determination as a reflection of decisions we are making or failing to make today.

Product development cycles, particularly sophisticated defense systems with no analogous counterparts in the commercial sector, take many years—even if anticipated streamlining initiatives shorten the process. Moreover, support and funding for high-risk/high-payoff technologies might atrophy in a climate in which modernization becomes stagnant and the threats are difficult to define. In such a system, is the stealth innovation of the next century now in its formative stages in some government laboratory? Will we recognize it and commit scarce funds to nurture it? Or can we rely on the nondefense-commercial sector to supply the next technological breakthrough critical to post-modern warfare? Will that breakthrough emerge from market forces currently shaping commercial developments? Historically both critical defense and nondefense advances—nuclear fission, radar, lasers, high speed computing, jet propulsion—have been the products of defense and public sector support. In short, how we resolve debates over technological development, information warfare, and automated unmanned weapon systems will shape the nature of conflict and our capacity to deal with it well into the 21st century.

There are indeed pressing imperatives to change the acquisition process. New technologies are being increasingly developed for the commercial marketplace using short cycle times to quickly incorporate new advances in products. Meanwhile, the current defense acquisition system with its complexity and endemically long cycle times hinders exploitation of this huge global source of new commercially-developed technologies. Declining investment in modernization only compounds the problem. This is a key aspect of the challenge confronting reform-minded policymakers seeking to provide the Armed Forces with superior capabilities.

In the final analysis it is useful to recall that as stewards of the public trust every member of the defense establishment has an obligation to find innovative, effective, and more efficient ways to arm and equip the Armed Forces. Moreover, intelligent initiatives aimed at reforming that process will be more successful if they are grounded in the world in which they operate—a free-enterprise democratic society which is at once political, military, social, and economic. **JFQ**

NOTES

[1] Thomas L. McNaugher, *New Weapons, Old Politics: America's Military Procurement Muddle* (Washington: Brookings Institution, 1989), p. 148.

[2] Ethan Kapstein, *The Political Economy of National Security: A Global Perspective* (New York: McGraw-Hill, 1992), p. 117.

[3] Mark Cancian, "Acquisition Reform: It's Not as Easy as it Seems," *Acquisition Review Quarterly,* vol. 2, no. 3 (Summer 1995), pp. 189–90.

[4] Anthony Velocci, "Sea Change Looming for Defense Contracting," *Aviation Week and Space Technology,* vol. 145, no. 8 (August 19, 1996), p. 20.

Improving the Management of Reserve Forces

By JOHN C. F. TILLSON

Debate over the role, composition, and employment of the active and Reserve components has gone on since the Revolution. Modern efforts to resolve it began with the total force policy in 1970. In his FY71 annual report on Reserve forces, Secretary of Defense Melvin Laird directed that the Reserve components be considered part of the total force available to achieve U.S. security interests. Through the 1970s they assumed a greater role in national strategy and by the end of the decade were getting the equipment and resources needed to maintain manning levels.

In the 1980s and 1990s the Reserve components improved their capabilities and increased their support to active forces. Both equipment and training in Army Reserve combat and support forces have been upgraded. Naval Reserve ships and aircraft squadrons have received modern systems and training. Air Force Reserve fighter, tanker, and airlift squadrons have been equipped with modern aircraft and funds to sustain near-active capability. The Marine Corps Reserve has been organized, equipped, and trained to reinforce and augment the active component and is increasingly integrated with active forces.

Active and Reserve component Air Force flying units train to the same standards, although active units train for more tasks. Reserve combat units periodically execute the same operational missions as their active counterparts (for example, Reserve combat and support units are operating in and over Bosnia). Also, they perform to the same standards in operational readiness inspections and win many total force flying competitions. Many Reservists serve more than 100 days of active duty per year, generally in two to three week increments.

Army Reserve artillery and Special Forces units routinely perform to standard—although in fewer tasks than active units. Naval Reserve squadrons and ships train to the same standards as the active Navy. Airlift and combat search and rescue represent 100 percent of the available assets and have become the training standard. Marine Corps Reserve combat battalions were successful in the Gulf War. Each service employed both Reserve units and individual Reservists effectively in that conflict to provide increased levels of support in a range of missions.

Questions regarding the accessibility of Reserve forces and their willingness to serve have largely been resolved. They were deployed successfully not just in the Gulf but in Panama, Somalia, Haiti, Kuwait, the Sinai, and Bosnia. The President's willingness to mobilize Reservists and their enthusiastic response has quieted most skeptics. Congress resolved other mobilization issues by extending the length of time that Reserve forces can be called to active duty under a Presidential Selected Reserve Callup (PSRC) to 270 days.

Despite success, problems remain. Relations between the active and Reserve components are

John C.F. Tillson is a member of the Strategy, Forces, and Resources Division at the Institute for Defense Analyses and formerly served in the Office of the Secretary of Defense.

at times dysfunctional, largely because of different cultures. There is uncertainty about the forces needed to meet the demands of national military strategy. The Army might have an excess of combat units but lack support personnel. There might be Reserve forces either that are not needed or that are needed in the active component for crisis response or forward deployment. There might be Reserve forces that should be reshaped or abolished. Some active forces could be eliminated or transferred to the Reserve components at substantial savings. The process for mobilizing and employing Reserve forces needs to be improved.

associate relationships between components have proven successful in changing culture

[EDITOR'S NOTE: *There are five active and seven Reserve components. Each military service—the Army, Navy, Marine Corps, Air Force, and Coast Guard—has an active component. The Reserve components include the Army Reserve and Army National Guard, Naval Reserve, Marine Corps Reserve, Air Force Reserve and Air National Guard, and Coast Guard Reserve. Consequently, terms such as* Reserves *and* Reserve forces *refer generically to the Army, Naval, Marine Corps, Air Force, and Coast Guard Reserve as well as the Army and Air National Guard.*]

Changing Culture

The first step is to change the culture of the active and Reserve components to enhance the effectiveness of the total force concept. This means influencing the beliefs, values, and wishes of each component with respect to the organization, capabilities, and expertise of the other.

Cooperation and trust are central to the total force. But lack of trust between the active and Reserve components is an impediment. The resulting competition is dysfunctional. We can no longer afford to maintain ineffective or overlapping capabilities because of poor cooperation or distrust among services or between components.

Each service has improved. The Air Force trains and evaluates its active and Reserve units at the same facilities (such as Red Flag) and to the same standard so that both components are confident in one another. The Air Force shows confidence in the Reserves by assigning them missions such as independent operations over Bosnia and allowing them to compete for new missions and functions. Active and Reserve members of the Air Force are enthusiastic about management practices that allow Reservists to take over specific functions or missions. In the Marine Corps, active duty officers command Reserve regiments and air groups, and active Marine Corps officers and enlisted members, functioning as instructors and inspectors, are responsible for the readiness of Reserve units. Some Naval Reserve ships are commanded by active officers.

Associate relationships between the active and Reserve components have proven successful in changing culture at unit level. Members of Army roundout brigades that worked closely with active parent units report great satisfaction in learning from their active counterparts while preparing to go to war together. These and other steps could be incorporated in individual service practices to raise levels of cooperation and mutual trust among members of both components. They could increase Reserve readiness and, by involving people with new ideas from the civil sector, enhance the level of innovation in the individual services.

Many of the initiatives below could improve cooperation and trust between the components and already are practiced in some services. The Army is implementing some of them in National Guard enhanced brigades. Most would also enhance Reserve readiness and total force efficiency.

- Train active and Reserve forces to the same standard and require both to demonstrate performance to standard. Make active commanders accountable for Reserve component readiness. Train Reserve units in fewer tasks to recognize their limited time for training. Link units and tasks to specific contingency plans.
- Expand opportunities for members of one component to serve in the other to enhance Reserve readiness and mutual understanding.
- Make active component duty with Reserve units career-enhancing by making it equivalent to command time (for example, active Marine instructors and inspectors assigned to Reserve units are selected by central command selection boards and receive command credit).
- Ensure that management information systems (in areas such as personnel and finance) operate seamlessly or handle members of both components under a single system.
- Develop educational programs that promote integration and mutual understanding of the history and background of each component.
- Simplify the transition for individuals and units between components.
- Conduct more integrated active and Reserve component training such as that performed at Army combat training centers and in the Air Force through air-to-air and bombing competitions.
- Increase the number of full-time (either active or Reserve) commanders and staff officers in Reserve units, especially in early deploying units.
- Adopt the Air Force notion of resourcing and assigning missions to the Reserve whereby the components work together to identify the resources needed to perform Reserve missions to standard and also the additional resources to tackle more demanding missions.

U.S. Air Force (Val Gempis)

Air National Guard F–16 in northern Australia.

Expanding Total Force Policy

The next step is to expand total force policy by greater use of Reserve forces. Employment of them in recent years has been influenced by our experience during the Cold War and in Vietnam. The Cold War threatened national existence and required a large ready force. High readiness led not only to a bias in favor of active forces but also to providing the Reserve components with the resources to maintain unprecedented readiness. The decision not to call up the Reserves during Vietnam created an impression that they would only be used in a conflict against the Warsaw Pact. The end of the Cold War lifted the threat to national existence, yet the demands on our forces have steadily increased. This change in threat allows a less stringent calculation of risk, demands to cut defense spending, and increased potential for "less ready" forces. Three complementary options arise for the Reserve components in this environment: using some Reserve forces in lieu of active forces to meet new security needs, preserving other Reserve forces at low readiness for a major national emergency that arises with long warning, and eliminating or reshaping any Reserve forces unable to meet these new demands.

History demonstrates that the Reserve components can perform critical jobs and are rapidly available on a voluntary or involuntary basis. This suggests they can often be used in lieu of active forces. Reserve component forces were used five times in recent years for major military operations and were included in planning for the reinforcement of Kuwait in 1994. They supported ground and air operations in Bosnia and Army multinational force and observer missions in the Sinai. Despite procedural and execution problems in joint and service management structures, the Reserve units themselves performed successfully in all cases.

In the Gulf War many Reserve combat and combat support units demonstrated an ability to perform to standard with little post-mobilization training. Two Army artillery brigades displayed

Special Forces and Navy Seabee Reservists, Mountain Bee '97.

U.S. Navy (Jeffrey S. Viano)

their performance in combat. Other units such as an Apache battalion, a Special Forces group, and a Reserve mechanized brigade were mobilized and performed to standard in tests and exercises. Marine and Air Force combat units likewise performed to standard in the Gulf. No Navy combat units were used in the war. In each service there was strong opposition in the active component to calling up Reserve combat units. Nevertheless, as General Colin Powell told Congress, "The success of the Guard and Reserve participation in Desert Shield cannot be overemphasized."

the decision to mobilize Reserves can enhance links between the Armed Forces and the American people

The successful voluntary and involuntary use of the Reserve components has demonstrated their capabilities in a variety of contingencies. Given pressure to cut spending, new threats, and the ability of Reserves to perform to the same standard as active forces, it is appropriate to consider changing force planning and programming guidance to give priority to Reserve over active forces. This assumes that Reserve forces display their ability to do the job. Those that do not can be put in a low readiness status or eliminated. Such change would also be consistent with our basic national values and militia tradition. Moreover, just as the decision to mobilize Reserves for the Gulf War helped commit the public to the Nation's objectives, their more frequent use also can enhance links between the Armed Forces and the American people.

Expanding total force policy requires changes in planning and programming guidance for active and Reserve forces, in plans for using Reserves, and in the ways such forces are managed, trained, and resourced. The expansion of the total force policy thus calls for a number of changes to be made. First, convert force planning and programming guidance to provide preference for placing forces in the Reserve. For example, put combat and support forces in the Reserve if they exhibit the ability to meet performance standards and deployment schedules suitable for assigned missions and if they are not required for forward presence or deployment.

Second, explicitly plan to call up combat and support forces for every contingency—from peace operations to a major regional conflict (MRC). Plan a balanced active and Reserve combat and

support force for the first MRC to assure the availability of a similar force for the second. Plan for mainly active combat forces in the first MRC and mainly Reserve combat forces for the second. Establish a policy calling for routine PSRC use. Develop simplified PSRC planning and execution procedures that, for example, require Reserve units identified for early deployment to demonstrate pre-mobilization performance to the same standards as active units. Reserves scheduled for later deployment must meet these standards after a designated period of post-mobilization training. Call up Reserve forces as part of the initial force or a rotation base (for example, deploy Air Force Reserve fighter squadrons in parallel with active units in a contingency; call up Reserve units, from civil affairs to infantry battalions, on a rotation basis for peace operations). Assure the readiness of Reserves for these missions by identifying units in advance. Plan for the use of volunteers—units and individuals, Reservists and retirees—in those operations including those for which PSRCs can be employed. For example, the Air Force might accept volunteers for individual flying missions while other services might call up entire units. Improve planning and execution procedures so that PSRC authority can be obtained rapidly and applied efficiently.

Third, improve Reserve management and training and provide added resources to enhance Reserve readiness and capabilities. Increase personnel and unit stability by enlarging the number of prior service personnel in Reserve units. Consider offering benefits such as affiliation bonuses, educational incentives, and enlistment contracts that cover both active and Reserve service. Modify Reserve compensation policy to take account of variations in the economy and to reduce turbulence through job tenure. Change the promotion system to avoid penalizing Reservists for staying in one assignment for an extended period. Provide income insurance to address disparities in civilian and military pay in order to improve retention and willingness to perform frequent tours of involuntary duty.

Give priority to early deploying units in allocating deployable full-time support personnel. Limit the frequency of unit reorganization since commanders report that it destroys readiness and morale in Reserve units. Improve pre-mobilization training with the use of simulators, multi-year scheduling, and close association with active units. Train specific Reserve units for peace and humanitarian relief operations so the Reserves can be used early. Improve plans and facilities for post-mobilization training. Ensure the availability of active and Reserve trainers. Organize training facilities for both components to ensure efficient post-mobilization training.

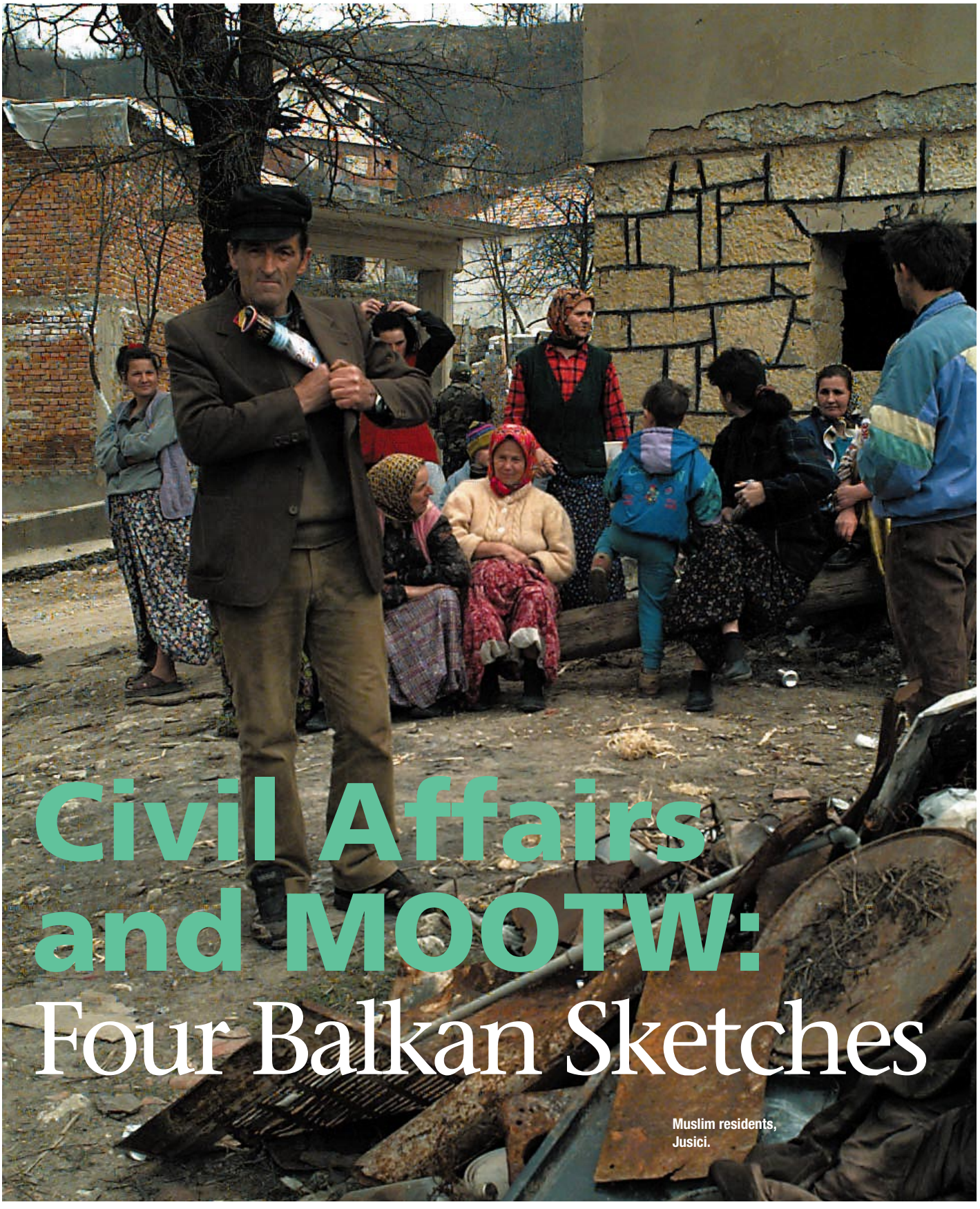
Realizing Potential

The last step is to examine new possibilities and validate Reserve capabilities. There will be opposition to some of the above proposals. However, while none of the changes have to be made overnight, virtually all can be preceded by experiments and pilot projects that investigate their potential. Proceeding in a reasoned, deliberate manner will generate support for change in both the active and Reserve components. Assigning an outsider to play a major role in the design, conduct, and evaluation of these changes will lend credibility to the results.

Decisions on the mix of active and Reserve forces and on new roles and functions for the Reserves are difficult to make absent good data. Tests can be conducted to assess the ability of both components to perform to standard (such as readiness for the range of military operations), devise ways to achieve Reserve readiness levels more quickly, experiment with organizational and training concepts and with increased levels of resources, experiment initially with Army combat maneuver brigades and Navy surface ships and carrier aviation, and establish pilot programs to test new concepts (such as a multi-year plan for a Reserve division to bring one maneuver brigade per year to a high level of readiness and to keep it there for a year).

The United States is gradually adjusting to the challenges of the new strategic environment. The most difficult changes may be taking place in the minds of the people, military and civilian, who must determine the direction the Armed Forces must take. Having won the Cold War, we do not have the shock of defeat to motivate change quickly. Nor is it necessary. Precipitate actions to reduce our forces or make other dramatic changes could lead to serious problems.

Nevertheless, if there is no major threat to our national security we can anticipate a steady reduction in defense spending that will compel us to make substantial changes in the size of our forces. Improving the management of Reserve forces will increase their readiness and ability to perform to standard. As their capabilities grow, we can rely more on the Reserves at the expense of the active component which will allow us to maintain force structure at least cost. Moreover, greater reliance on militia forces in lieu of a large standing military is consistent with the history and traditions of the Nation. JFQ



Civil Affairs and MOOTW: Four Balkan Sketches

Muslim residents, Jusici.

55th Signal Company, Combat Camera (Larry Aaron)

Joint Endeavor—The Role of Civil Affairs

By PAMELA J. BRADY

Under the General Framework Agreement for Peace (GFAP) NATO deployed a combined joint task force known as Implementation Force (IFOR) to Bosnia-Herzegovina. It consisted of the 1st Armored Division, which was designated Multinational Division North, while a British division controlled the southwest and a French division was assigned responsibility for the southeast part of the country (see map on next page). These multinational divisions were put under the command and control of Allied Command Europe (ACE) Rapid Reaction Corps (ARRC) which functioned as the land forces command under IFOR.

One cannot overstate the importance of the military aspects of establishing and maintaining a zone of separation and freedom of movement. These tasks were instrumental in establishing a secure and stable environment that allowed Muslims, Serbs, and Croats as well as both international and humanitarian organizations to execute their obligations, particularly the civilian aspects which included recovery, reconstruction, repatriation, and reconciliation.

Joint Endeavor marked the unprecedented involvement of civil affairs (CA) in this NATO-led mission which involved 36 countries. The 353d Civil Affairs Command of the Army Reserve and 96th Civil Affairs Battalion, an active unit based at Fort Bragg, embarked on a joint endeavor of their own which could set the tone for future missions of this type.

Lieutenant Colonel Pamela J. Brady, USAR, 353d Civil Affairs Command, served as CIMIC civil information officer during Joint Endeavor.

This cooperation between active and Reserve components created the basis for Reservists to take responsibility for civil-military operations in a transparent manner. The IFOR commander formed a principal staff directorate known as combined joint civil military cooperation (CIMIC). Joint Endeavor consisted of building consensus and understanding among the Bosnian people to implement GFAP. Here civil affairs negotiating skills were instrumental. CIMIC was a vital link between military and civilian efforts, especially as operations evolved from the entry phase through implementation to transition to peace and then toward the desired endstate. Planning shifted from stressing rapid deployment of enabling forces, minimizing interference and promoting support for IFOR, and developing commissions for establishing and maintaining liaison with affected civilian organizations, coordinating freedom of movement, leveraging the capabilities of nongovernmental organizations (NGOs), private voluntary organizations (PVOs), international organizations (IOs) and host nations, and identifying and transferring many civil-military tasks to nonmilitary agencies. While CIMIC was not chartered with nationbuilding, it created institutions by providing niche and unique resources to civil agencies to facilitate growth and ensure their success.

It was during the transition to peace that the civil aspects of the accords became increasingly important and IFOR occupied a greater role in supporting civil implementation. IFOR policy reflected this increased involvement in civil tasks by allowing and encouraging the military to assist civilian agencies (as far as resources permitted and without detracting from the military mission) whenever possible as a means of stimulating civil restoration and return to normalcy. GFAP also clearly outlined supporting IFOR tasks to be conducted on request and within the limits of assigned principal tasks and available resources. Some reconstruction, rebuilding, and demining operations that supported the military had a beneficial collateral effect on civilian reconstruction through road and bridge building. While some may regard this as mission creep, civil and military leaders came to understand that exclusive oversight of the military provisions of the peace agreement would only postpone re-establishing normalcy and could prolong the need for an outside military presence.

CIMIC was involved on virtually every level of rehabilitation and reconstruction in Bosnia. Because of their unique expertise and linguistic capabilities, CA personnel were instrumental in facilitating relations among NATO forces, civil authorities, and various factions of the population. CIMIC soldiers had an operational grasp of the issues affecting Croats, Muslims, and Serbs. This understanding of local conditions provided IFOR with a baseline on strengths and weaknesses of the civil sector and indicated the types of civil-military operations that would be effective. It helped establish, maintain, and influence relations among the military, civil authorities, and the local population as they focused on a unity of effort rather than the traditional unity of command.

Recognizing that the civil dimension was equally if not more important than the military, the London Conference of the Peace Implementation Council established the Office of the High Representative headed by former Swedish Prime Minister Carl Bildt. His mandate was to oversee the civilian implementation of GFAP and included creating political and constitutional institutions, fostering economic reconstruction and rehabilitation of infrastructure, promoting respect for human rights, encouraging the return of displaced persons and refugees, continuing humanitarian aid for as long as necessary, and assisting with both free and fair elections.

Coordination of the myriad institutional activities critical to the return of peace and stability in Bosnia was a daunting task. Both Bildt and IFOR recognized that close coordination was vital to restoring political and economic infrastructure in a secure environment. This relationship was enhanced by the role that CIMIC played in facilitating, coordinating, monitoring, and reporting on civil-military projects. CA personnel oversaw projects to maximize interaction while encouraging independent initiatives among the parties. Coordination also ensured that priorities were consistent with policies of the host nation, Office of the High Representative (OHR), Organization for Security and Cooperation in Europe (OSCE), U.N. Mission in Bosnia-Herzegovina, U.N. High Commissioner for Refugees, and a myriad of governmental, civil, and international agencies working in theater.

As required by GFAP, and as a means of giving both the military and civilians a venue to review and coordinate reconstruction efforts, a joint civil commission was established in Sarajevo as a template for representatives in Tuzla, Banja Luka, and Mostar. The commission consisted of a small headquarters and functional working groups that focused on the constitution, freedom of movement, telecommunications, infrastructure, refugees, and police.

Infrastructure subcommittees were formed for eight technical subgroups: gas, electricity, water/sewer/solid waste, economic development, urban transport, roads and bridges, cemeteries, and railways. Technical subgroups varied on the regional level depending on needs in a particular area. CIMIC personnel were absolutely essential. They continually applied civilian knowledge, skills, and expertise while accompanying government representatives and industrial specialists on assessments to formulate action plans and build consensus among the concerned parties.

The conditions for regional security created by IFOR significantly increased and facilitated humanitarian assistance throughout the country. Hundreds of NGOs, PVOs, and IOs were able to dispense aid on a larger scale because of the security and enhanced freedom of movement provided by the military. This support was furnished with measured, cautious, and judicious constraints. For example, it was provided in cases where the military had unique assets that were not available in the civil sector, where military assistance would facilitate or dramatically speed up the task, and where military goals and objectives were satisfied—that is, to drive civil recovery with execution of labor intensive projects to address employment of demobilizing soldiers.

The NGO/PVO infrastructure in theater was mature. These unsung heroes had been at work more than four years and had developed an extensive network. CIMIC was anxious to coordinate with them to maximize mutual capabilities. Theater-wide centers and computer discs with NGO/PVO spreadsheets facilitated such interoperability. In Sarajevo, the International Council of Volunteer Agencies and CIMIC set up a walk-in center as the focal point of NGO coordination. Participants met regularly to discuss current operations, share information, and lodge requests for military and NGO support. Security briefs and assessments were critical to working relations. Without security reinforcement, NGOs would probably reduce their risks by minimizing efforts. In addition to security information, CIMIC provided the NGO community with mine maps and awareness training.

CIMIC also coordinated intratheater space available flights and approval for transportation over military bridges. Through facilitating their entry into theater, CA personnel created conditions that leveraged NGO capabilities because bridge crossings were pivotal to

the prompt movement of humanitarian and reconstruction equipment. In some cases, by utilizing a joint movement control center, military bridges reduced the delivery time of relief supplies from five days to five hours.

Through CIMIC coordination, NGOs became force and resource multipliers. CA soldiers were especially adept at brokering and linking funds, personnel, and equipment to the task at hand. One example of this was demining the transit system in Sarajevo. In assessing public transportation, it was found that the tram line was not running because of land mines along the tracks. Demining the system was important for the economy, freedom of movement, and the city's return to normalcy. CIMIC expedited demining by contacting and facilitating the arrival of Norwegian People's Aid, which was geared for such operations. By using NGOs, CIMIC created conditions that allowed for the early restoration of transport throughout the city.

In addition to humanitarian agencies, CIMIC augmented the staffs of several organizations such as OHR, OSCE, World Bank, and International Police Task Force (IPTF). With expertise in banking, economics, law enforcement, etc., 353d Civil Affairs Command was instrumental in providing planning, operations, communications, computer, administrative, and logistic support to regional joint civil commissions. It was directly involved with developing voter registration, analyzing loan approvals, and establishing plans and policy for reorganization of Federation and Republic of Serbska police forces in accordance with international standards.

While all these functions were important to the restoration of Bosnia, a major civil affairs focus for the first eight and a half months of Joint Endeavor was on supporting conditions for free and fair elections. Critical to success was continued public support for the IFOR mission, which would ultimately affect the legitimacy of political authorities. CIMIC engineers worked with both the Office of the High Representative and the International Federation of Journalists to establish the Open Broadcast Network for free access to radio and television campaigning. In conjunction with OSCE, the CIMIC civil information office created an inter-entity editors' forum to focus on accuracy and fairness in reporting the elections and improving cooperation.

Through such means civil affairs personnel were successful in influencing public opinion. Moreover, knowledge of language, history, and other factors provided insights into ethnic groups. Armed with this knowledge, CIMIC served as a force protection element by contributing valuable input to the overall IFOR information campaign, whose key themes and messages were geared to increasing the popular understanding and acceptance of the peace accords. This was accomplished by various means including a "meet the mayors" information campaign to explain the peace accords to local authorities throughout Bosnia-Herzegovina.

Mobilizing public support was difficult. It was obvious that the civil war among Muslims, Serbs, and Croats had major political overtones. The Serb leadership in particular was not swayed by economic incentives. The objective of each faction was the territorial displacement of ethnic enclaves. Despite the show of force by IFOR, friction continued as evidenced by human rights violations and Serb migration. Such instability is attributable to both self-determination and a desire for sovereignty, issues which prove the value of regionally oriented CA professionals.

One lesson of Joint Endeavor was the value of a civil-military coalition and the power of unity of effort versus unity of command. Such missions require working with NGOs, PVOs, IOs, and host nation governments for the effective coordination and implementation of relief, recovery, rehabilitation, reconstruction, reconciliation, and repatriation.

Civil affairs will become a critical element as the civil-military interface becomes more dominant than tactical elements in future peace operations. The international community will continue to rely on U.S. leadership and capabilities, especially in planning and implementing large scale peace and humanitarian operations. Joint Endeavor is only the most recent example of such combined joint and international efforts. Great strides have been made toward securing peace in Bosnia through a consensus of views and a unity of effort. The future is promising because combat arms and civil affairs complement each other's efforts in order to "secure the victory." JFQ

Separating Muslims and Serbs, Gajevi.

55th Signal Company, Combat Camera

The National Support Element in Hungary

By BRUCE CASTKA

Taszar barracks, Hungary

55th Signal Company, Combat Camera (Larry Aaron)

In autumn 1995, U.S. Army Europe (USAREUR) sought an efficient and expeditious means to insert the American portion of Implementation Force into the former Yugoslavia. Several options were reviewed to include using ports along the Croatian coast to land the force from the sea. Since the majority of personnel and equipment would come from Germany, a decision was made to use a land bridge through Austria, Hungary, and Croatia over rail and road networks. As a peace agreement became more probable, USAREUR and V Corps conducted reconnaissance to locate a staging base in Hungary as far forward to the area of operations as possible.

Colonel Bruce Castka, USAR, is deputy chief of staff for logistics, 353d Civil Affairs Command.

It was important that the Hungarian government, military, and people accept this mission. Accordingly, 353d Civil Affairs Command was called upon to support civil-military operations at USAREUR Forward (FWD) headquarters, secure civil-military cooperation between U.S. forces and the Hungarian body politic, and win the support of the local population for Joint Endeavor.

V Corps G-5 took the lead in gaining requisite support from a country which only recently had been ruled by a communist regime and was somewhat skeptical of a foreign military presence. After considering several sites, Hungarian facilities in the Kaposvar/Taszar region were selected. This area was chosen for its airfield, installations, and other assets that could support a logistical sustainment force. In addition, it is situated on a major north-south road network leading to Barcs and the Sava River crossing into Croatia at Zupanja. The railhead of Dombovar is also nearby. In early December 1995 U.S. forces began landing in C–130s at Taszar. Among the first elements to arrive was the V Corps G-5 staff, which immediately met with leaders in Kaposvar/Taszar.

It was essential that the Army immediately develop a capability in Hungary to support the deployment. Although years of NATO planning had included discussions of multinational logistic support operations, that option was not adopted for this operation. The British and French forces, which had been previously deployed in Bosnia, had logistical supply lines in place, with Split as the primary port of entry in Croatia. They were therefore assigned to southern Bosnia, the British in the southwest and French in the south. Having no previous ground presence, the United States was assigned to the north with headquarters at Tuzla. Moving tons of matériel overland became a challenge for USAREUR FWD with its forward support base at Taszar.

Given the significance of civil-military cooperation in Hungary, USAREUR requested a full civil affairs complement with a lead element arriving early in the new year. By the end of January 1996, CA Reservists were on-site and deployed in small, functional tactical support teams. Several were fluent in Hungarian or had professional expertise relevant to the deployment area.

Teams were located at strategic points where the potential for misunderstandings with local people was the greatest. One was attached to 29th Area Support Group at Taszar, a farming village astride a major U.S. installation. Others were assigned to the critical main support route at Barcs, Hungary, and 1st Armor Divisional Support Command at Slovanski Brod, Croatia. Another team was assigned to a training site set up by 7th Maneuver Training Command at Taborfalva, Hungary. These teams focused on supporting the local population as dozens of convoys carrying everything from food and water to Abrams tanks rolled through the frozen countryside.

55th Signal Company, Combat Camera (Jean-Marc Schaible)

Hungarian engineers near Sarajevo.

Glossary of Terms

ACE	Allied Command Europe
ARRC	ACE Rapid Reaction Corps
CA	civil affairs
CIMIC	civil-military cooperation
GFAP	general framework agreement for peace
IFOR	Implementation Force
IO	international organization
IPTF	International Police Task Force
NGO	nongovernmental organization
OHR	Office of the High Representative
OSCE	Organization for Security and Cooperation in Europe
PEC	Provisional Election Commission
PVO	private voluntary organization
UNHCR	U.N. High Commissioner for Refugees
USAEUR	U.S. Army Europe

Three additional CA teams functioned in direct support of USAREUR FWD. One formed a civil-military operations center at the tactical operations center at Taszar which conducted 24-hour operations seven days a week. It served as the civil affairs eyes and ears of the tactical operations center advising USAREUR FWD on all matters pertaining to deployment and employment of CA forces in theater. They kept the commanding general of the national support element current on their status and role in supporting civilian agencies responsible for implementing the peace accords.

The second team conducted civil-military liaison at the county center office complex located in downtown Kaposvar. It was there that the Army coordinated with the commercial infrastructure for support. Hungarian civilians made offers to provide all classes of supply and services—from vehicle repair to dry-cleaning—which were forwarded to Army contracting. Trade shows permitted contact with vendors, establishing strong links with the local economy.

The third team conducted an active campaign to influence the public. It traveled throughout southern Hungary visiting 75 schools and 40 town governments. Meetings from the kindergarten through high school level were highly effective in communicating U.S. objectives to students and their parents. Hungary also has flourishing media outlets (print and television) and our soldiers made news wherever they went. Through press conferences, talk shows, and local newspapers, CA personnel fostered support, particularly in critical operational areas as American troops rolled south during the winter. When concerns arose over their activities, the local political establishment turned to assigned CA teams to resolve them. The issues that surfaced were quickly brought to the attention of USAREUR FWD for action.

Within ninety days the Army safely deployed 20,000 soldiers into its area of responsibility. Bolstered by the national support element in Hungary, American troops brought a total cessation of hostilities within their sector. Hungary, which now is being considered for membership in NATO, was pivotal to that success. Its cooperation was evident throughout the mission and is attributable, at least in part, to efforts by the civil affairs teams that sustained host nation support. The unique skills of CA personnel were ideally suited to generating effective civilian-military cooperation and accomplishing the vital mission of securing peace in the Balkans. **JFQ**

Transition of the Sarajevo Suburbs

By KEVIN F. McCARROLL and DONALD R. ZOUFAL

One early test of the Dayton accords was the transfer of areas around Sarajevo—known as the "Sarajevo suburbs"—from Serbian to Bosniac control. This included the following opstinas (municipalities or counties) of Bosnia-Herzegovina: Vogosca, Centar, Novi Grad, Ilijas, Hadzici, Ilidza, and Nova Sarajevo (Grbavica). These areas were part of the front lines during the war and fighting for control of them was intense. The transition and overall peace depended upon cooperation between civilian and military agencies. Also vital was the support of civilian agencies that lacked logistics and communications early in the mission. Support for managing civil elements of IFOR began with the deployment of CA Reservists and creation of CIMIC at IFOR headquarters.

Only a few tasks that GFAP assigned to IFOR under annexes 1A and 1B were traditional military responsibilities. Under the accords, the military tasks were to be completed by D+120, while civilian tasks had longer timelines. Many agencies were given nonmilitary tasks which were functionally organized. OSCE was assigned responsibility for elections, while the U.N. High Commissioner for Refugees (UNHCR) was charged with refugees and displaced persons.

IFOR also created the International Police Task Force to retrain the indigenous police consistent with democratic principles and OHR which was charged with coordinating activities of all civilian agencies. While each organization was important to the peace process, three were especially critical to the transition: OHR, IPTF, and UNHCR.

Although IFOR was responsible for providing a secure environment, working relationships under IPTF were key to the transition. The transfer was to occur at D+45 (February 4, 1996). As that date approached it was clear that the parties would not be prepared in areas around Sarajevo. Prior to the deadline there was increased consultation between the IFOR commander and the high representative who had primary responsibility for coordinating the transfer of authority. On D+45 they issued a statement indicating that the suburbs would be transferred between D+45 and D+90 and that the Federation police would be in full control of the areas concerned by D+91.

IFOR, OHR, and IPTF (through the U.N. Mission in Bosnia and Herzegovina) agreed that IPTF would take the lead. According to their joint statement it was within the IPTF mandate to "oversee the preparation for and gradual transition to an integrated and representative Federation police force . . . from D+45 to D+90" while IFOR supported IPTF by maintaining an "enhanced presence" in these areas.

The statement also indicated that public safety was the focal point of the transfer. Both the monitoring and control of Federation police and Serb civil authorities during the 45-day transition were primary goals of the international community. The multiethnic character of pre-war Sarajevo was to be preserved in a stable environment. UNHCR played a central role in encouraging Serbs to remain in place both during and after the transition.

The Police

IPTF was created by U.N. Security Council resolution 1035 in December 1995. Member states were to contribute 1,721 police officers for the mission. These monitors were not armed and had no executive authority.

Sarajevo and Environs

Lieutenant Colonel Kevin F. McCarroll, USAR, is assigned to the government team and Major Donald R. Zoufal, USAR, is public administration officer, 308th Civil Affairs Brigade.

Their mandate, outlined in annex 11, included the following tasks:

- monitor, observe, and inspect law enforcement activities and facilities
- advise and train law enforcement personnel
- assess threats to public order and advise accordingly
- advise on law enforcement restructuring
- facilitate assistance to law enforcement
- assist by accompanying law enforcement personnel.

Police monitors were required to have at least eight years of law enforcement experience. Some were initially assigned from U.N. missions in the region. All received a five-day orientation at the support base in Zagreb where their English comprehension and driving abilities were tested. Given the differing theories and resources of the contributing states, policing skill levels and styles varied greatly. Moreover, a steady inflow of monitors was never assured.

The Secretary General's report on IPTF stated that it was to be headed by a commissioner in Sarajevo and include 3 regional, 2 subregional, and 17 district headquarters—plus 109 police stations across the country. But the number of stations was subsequently cut almost in half and little of the organization was in place by February 1996. Although the commissioner, deputy commissioner, chief of staff, and chief of operations had been appointed, they had not yet arrived. Three regional offices had been established with minimal resources in Banja Luka, Tuzla, and Sarajevo. Yet only a handful of district and local stations had opened under an acting IPTF commissioner. The main headquarters had no staff and the Sarajevo regional headquarters was being moved. The personnel needed to monitor operations were in short supply—fewer than 400 countrywide and under 200 assigned to the area around Sarajevo.

In addition to manpower difficulties and almost no command and control structure, IPTF faced other critical deficiencies. Habitable office space was at a premium. Also scarce were phone links, for example between IPTF headquarters and IFOR, the support base in Zagreb, and field stations. In addition, radios, base stations, vehicles, and petroleum products were in short supply. While the picture improved marginally just prior to the transition, IPTF was a fragile organization with limited assets, and communications and logistic shortages continued throughout the transfer.

Given this situation, it was clear that IFOR support would be needed for IPTF to carry out its responsibilities. Failure would present two undesirable alternatives. Either the transition of the Sarajevo suburbs would be conducted without a credible force to monitor and control public safety services or IFOR troops would have to fill the void. The first would have been disastrous for the peace process and the second would represent unacceptable mission creep.

Beyond the enhanced presence discussed in the joint statement, IFOR assistance to IPTF during the transition took two forms. The first was help with preparing the overall plan and the second was direct assistance in operational planning, management, logistics, and training. This support was provided by CA personnel with public safety expertise and ultimately furnished acting chiefs of both plans and logistics for IPTF, operations assistants, and trainers.

Assigning CIMIC personnel to IPTF headquarters served two purposes. First, it bolstered IPTF by providing management skills to an organization whose command structure was not fully formulated. Second, it ensured a solid communication link between IFOR and IPTF headquarters. This link was invaluable in managing operations related to the transition.

Transfer Planning

The transition occurred in two distinct phases. The first involved an overall plan assigning duties to OHR, IFOR, IPTF, and UNHCR, and the second was a supporting plan to integrate task force operations under IFOR. CIMIC members were integral to both. In preparing the plan it was essential to identify factors that impacted on public safety and that constrained the provision of safety services. ARRC furnished expertise on developing the overarching plan, with CA Reservists providing input on the local police and IPTF on the management of public safety.

The Federation Interior Ministry was asked to submit a plan for public safety during the transition which proposed police saturation. The numbers suggested were several times higher than the total existing Serb police force in these areas. In addition to a police force that was out of proportion to legitimate public safety concerns, the Federation proposed policing tactics that would have further intimidated those Serbs who chose to remain, including house-to-house searches and checkpoints to control access to transition areas. The size and tactics of the proposed force were inconsistent with democratic policing practices under GFAP and could have destabilized the public safety environment. It was clear that the Federation police would have to be closely controlled and monitored. Given the limited IPTF manpower and logistic support, this presented a significant challenge.

By February 9 all major agencies including IFOR agreed to the preliminary components of a plan. It was decided that transition of the suburbs would take place one opstina at a time. That would allow IPTF and the supporting agencies to focus on an individual suburb and enhance the presence of police monitors in the critical days before and after the transfer. Careful consideration was given to size, population, political environment, presence of vital public facilities, and threat assessments in selecting the order of transition. The plan coordinated efforts of OHR, UNHCR, IPTF, and IFOR. These included a joint information campaign conducted by IFOR and OHR to build confidence in the transition and encourage Serbs to remain in place. OHR also focused on political structures to prevent inflammatory rhetoric and encourage adoption of amnesty legislation to allay fears of former Serb soldiers who were considering remaining.

IFOR prepared a plan to generally increase its presence immediately before and after the transition of each opstina. CA Reservists from CIMIC also coordinated surveys of each area to identify high impact civic improvements. These projects were intended to build confidence and improve the quality of life. UNHCR opened local offices to provide relief, reconciliation, and safe havens in the transitional areas.

The IPTF plan was the centerpiece of the planning effort. With the overarching scheme in place identifying roles and responsibilities of each component, IPTF was left to devise a Federation policing strategy which fit into the overall plan. As noted, the task force had little staff on hand at the time of transition. Its emphasis was on assigning every monitor in the mission area to the field. Moreover, it was not able to target recruiting on operational or logistics specialties. An infusion of experienced personnel and an ability to integrate the civil police plan with the military was essential for IPTF in preparing an operational plan.

Pointing out "hot spot" on election day, Sarajevo.

U.S. Air Force (Benjamin M. Andera)

Public safety specialists from CIMIC who augmented the IPTF headquarters staff provided requisite expertise. Working with the acting commissioner and his staff as they arrived in the mission area these CIMIC members addressed various challenges to ensure the development of plans to closely integrate IFOR and IPTF operations. CIMIC staff members also used military assets to reduce logistics and communications shortages on IPTF operations.

CIMIC personnel coordinated preparation of the IPTF portion of the transition plan. After deciding that the operation would be phased and the order in which the areas would be transferred, IPTF prepared a timetable to maximize its impact on the transition process. However, even with all IPTF resources focused on one opstina at a time, it was clear that the police structure proposed by the Federation would be overwhelmed. The only way a few monitors could supervise the police was to cap their number, which became a key feature of the IPTF plan.

Under the task force scheme the Federation was limited to 545 policemen in the transition areas. Each area was allocated a maximum number. Authorized officers were issued photo identification valid in only one area. For example, since 80 officers were issued badges for Vogosca, IPTF only had to monitor that number.

In addition to reducing the number of officers, the plan controlled Federation police tactics. CA Reservists working with the IPTF deputy commissioner prepared guidelines limiting the types of arms, searches, and checkpoints and requiring prompt reports on arrest and detention. Only uniformed operations by trained personnel with IPTF-issued credentials were permitted in the areas. These officers had an orientation on the guidelines before credentials were issued.

Europe's Troubled Neighorhood

Federation officers were interviewed by IPTF prior to being issued photo identification and signed a document accepting individual responsibility under the guidelines. This screening helped develop familiarity and communication among monitors and police. Public fears of the Federation police were allayed by the fact that IPTF maintained files on these officers. Moreover, this process also ensured ethnic representation among the police during the transfer (see figure). A multiethnic presence was of both practical and symbolic importance.

While screening was conducted by IPTF it was managed and supported by CA Reservists from CIMIC who arranged for the military to photograph police officers and prepare identity cards. The team managed logistics and supervised the overall process. CIMIC also helped IPTF establish a schedule and procedures for the transition. The timeline required that one opstina be transitioned every six to seven days from February 23 to March 19. This allowed IPTF to focus personnel and resources on a specific area two or three days before transition and reduce it shortly after, maximizing its impact during critical times.

Key resources like power stations and water facilities were made patrol priorities by IFOR, allowing IPTF to concentrate on the civilian populace and Federation police. CA planners from CIMIC along with IPTF developed contingency plans, and crisis response was coordinated with IFOR to further reduce personnel and resource pressure on IPTF. Plans covered widespread civil unrest, fires, public utilities emergencies, sniper attacks, detection of mines and unexploded ordnance, and casualty evacuation. In addition to planning, CIMIC personnel helped expedite the intake of new officers. They trained monitors at the civil police support base in Zagreb and helped the United Nations accommodate more monitors. This augmentation together with a change in deployment policies that funneled monitors into Sarajevo district reduced shortages in personnel, especially later in the transition.

Ethnic Representation in Police Force

Opstina	Serb	Croat	Muslim	Total
Vogosca	30	8	48	86
Centar	6	2	12	20
Novi Grad	3	3	29	35
Ilijas	24	15	50	89
Hadzici	24	5	51	80
Ilidza	28	18	72	118
Grbavica	9	13	68	90

Regarding command and control, CIMIC personnel set up a joint operation center to coordinate IPTF operations with those of IFOR during the transition at headquarters, Multinational Division Southwest, the divisional command responsible for Sarajevo. CIMIC personnel arranged for a military communications link with the IPTF headquarters operations center. By creating the CIMIC center and linking it with military communications, IPTF improved its capability to coordinate with IFOR. While only an alternate, this communications capability was valuable in emergencies.

This IPTF access to IFOR communications is a good example of CA coordination between civilian and military organizations. It did not significantly tax the military communication network but greatly increased the ability of IPTF to reach its units in emergencies. Moreover, the presence of IPTF personnel in JOC and access to military communication at IPTF headquarters gave IFOR instant access to key IPTF personnel and information which was critical throughout the mission.

The transfer of the Sarajevo suburbs was not without problems. IPTF planning, however, was flexible enough and communication and coordination between IPTF and IFOR adequate to meet the challenge. But overall success is hard to measure. The number of Serbs who remained in these areas was smaller than hoped but not much more than expected. And while property damage occurred, there was no widespread destruction. There was only one fatality, a woman killed by a booby-trap on the last day—an unavoidable event even with perfect planning. Moreover, although there was violence, the transition was relatively tranquil given the emotional nature of the conflict. Significantly, it did not derail the peace process, which is perhaps the best indicator of the transition team's success.

The transition could not have advanced without close cooperation between IFOR and IPTF. CIMIC linked the civil and military sectors and served as the catalyst in establishing cooperation, contributing directly to IPTF plans, and enabling the task force to fulfill its mandate. The liaison conducted by CA personnel assigned to CIMIC resulted in an exemplary IPTF and IFOR team.

CA Reservists were uniquely qualified to be the link between civilian and military agencies. Their experience enabled them to appreciate tasks assigned to civilian agencies under the accords. The public safety team had dealt with similar problems in their everyday lives. Throughout the operation the IPTF commissioner acknowledged that civil affairs personnel provided capabilities in law enforcement, police training, and patrolling urban areas. Thus they garnered credibility with their counterparts, enabling them to forge a critical link between IFOR and IPTF. JFQ

The Challenge of Civil-Military Operations

By JOHN J. TUOZZOLO

Hostilities in Bosnia-Herzegovina officially ended in December 1995 with the signing in Paris of the Dayton peace accords, which had been reached a month earlier. It was hoped that with this agreement not only would 60,000 members of IFOR arrive but also that peace would bring a chance for a once advanced society to regain its prominence. However, not long after its arrival IFOR learned that there are substantive differences between peacekeeping and peace implementation. This article focuses on two civilian functions that required substantial military attention and resulted in a textbook case of civil-military cooperation.

To achieve peaceful coexistence several prerequisites were identified by the framers of the Dayton agreement. Establishing a viable central government along with its various elements was crucial. Also implicit was the need for a functioning legal system as well as elections which were mandated to take place within nine months of the agreement or no later than September 14, 1996.

Success depended on cooperation among parties who agreed on very little, not only in the previous four years but throughout their history. IFOR was quickly confronted by this reality, which resulted in a civil-military challenge of epic proportions. Deep-seated ethnic feelings reflected a sharply divided population. During World War II, the Croatians had aligned themselves with Germany while the Serbs had fought with the Soviet Union, compounding an already difficult situation.

Colonel John J. Tuozzolo, USAR, is a member of 353d Civil Affairs Command; he served with IFOR/CIMIC and OSCE mission to Bosnia-Herzegovina.

The Legacy of Tito

Internal tensions were, however, substantially kept in check after 1945 by the rise to power of Josip Broz Tito. Despite the controversial role of Yugoslavia behind the Iron Curtain, the country and its people prospered under Tito's dictatorship. In fact, under his special brand of communism, citizens were well educated and allowed to enjoy many of the benefits of their labors. Achieving worldwide fame, Sarajevo hosted the winter olympic games in the mid-1980s, although its world-class ice rink is in near ruin and has served as home to British forces.

After Tito's death no one could keep the various factions together. The republics began breaking away from the central government, resulting in new nations such as Slovenia, Serbia, and Croatia which were for the most part ethnically homogeneous. The geographic area now known as Bosnia-Herzegovina remained a diverse society populated by Muslims (who prefer to be called Bosniacs), Croats, and Serbs. The ingrained beliefs, prejudices, mistrust, and ambitions of these various peoples inevitably led to four years of bloody conflict.

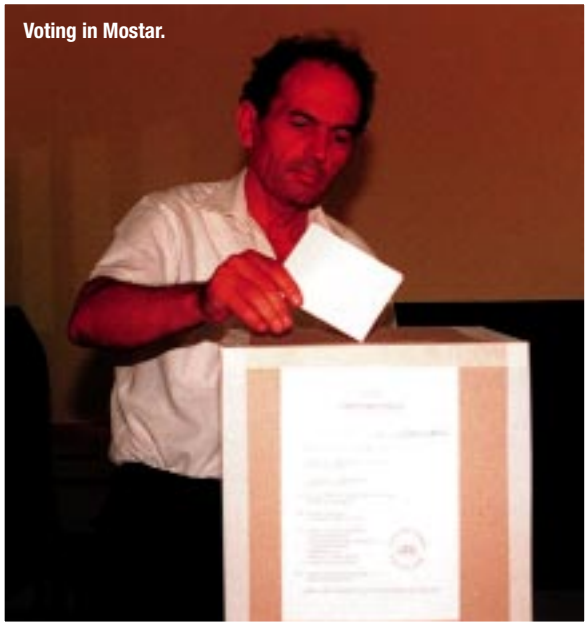
To say that the war took its toll on Bosnian institutions presents only one side of the story. Nearly all government functions and activities ceased except waging war. The impact was very different depending on one's ethnic identity and where one lived. However, the necessities of life were lacking throughout the land. In short, if it was not for the hundreds of NGOs from around the world and millions of dollars in donations which they distributed, the people of Bosnia might have perished by the thousands.

Greek soldiers guarding ballot boxes in Zenica.

1st Combat Camera Squadron (Andy Dunaway)

Processing absentee ballots.

1st Combat Camera Squadron (Lance Cheung)



Voting in Mostar.

Combat Camera Imagery (Marvence D. Braswell)

IFOR thus faced a situation somewhat reminiscent of World War II but without a mandate to govern or restore essential services. The peace agreement and other accords assigned nation-building to civil agencies. For instance, OHR would reactivate the civil infrastructure and joint civilian commissions dealt with communications, transport, and economic development. Elections, however, were relegated to the warring parties, international agencies, and OSCE.

The Military Role

Stabilizing the situation, separating and disarming the various parties, and providing limited assistance, adequate security, and freedom of movement for all civilians as well as NGOs charged with effecting the peace was left to the military. That mission would develop into one of the most extensive civil-military operations in U.S. and NATO history. Furthermore, despite the concern over excessive IFOR involvement ("mission creep") and the effort to limit the military role to the letter of the agreement, the civilian implementation of the peace mandate could not be accomplished without active participation by the military in civilian support organizations.

An unforeseen and lesser known concern was the judicial system. After four years of war and the physical separation of the factions it was in dire need of rejuvenation. Over two-thirds of the judicial positions were vacant, statutes were difficult if not impossible to locate, and legal texts were nearly nonexistent. Despite this state of affairs, neither the agreement nor the various NGOs envisioned helping this critical institution. CA personnel were the first to identify this problem and immediately render assistance using their civilian expertise.

If the judicial system was sick, the electoral process was comatose. The last country-wide election had been held in 1991. There were no election laws to which all parties could agree and no voter registration lists. OSCE was overwhelmed by the task of registering 3.5 million voters in Bosnia and 20 other countries. Virtually every phase of the process required support. Again, CA personnel proved valuable for this NGO, which is not to say that the military provided unusual services or that the judicial and electoral systems were driven by individuals in uniform. Rather, this mission had become

a cooperative civil-military engagement instead of a traditional exercise.

The Judicial System

During the Tito regime Yugoslavia had a functioning judiciary, albeit under communism. It had both criminal and civil courts and an appellate process. There was criminal and civil procedure as well as a criminal code, civil laws, and precedent. Also, consistent with a functioning judicial system, courts on all levels had geographic jurisdictional control and authority. They were active with a compliment of judges who tended to reflect the ethnic make-up of the general population.

With war, the ethnic balance of the judiciary favored the faction which controlled the area. A noted exception was the Federation minister of justice, a Bosnian Croat. Moreover, throughout the conflict it became increasingly difficult to keep the judicial system going. Several by-products of the war caused its near total collapse. Foremost was the fighting and destruction. For example, the high appellate court building in Sarajevo was a frequent target of Bosnian Serb shells from the surrounding hillsides. Even in the uncontested areas the lack of resources became severe. In addition, some jurisdictional disputes crossed the confrontation lines. How could a Bosniac judge expect a decree enforceable in a Serbian held area to be acted upon?

Although the chief of CIMIC was named in January 1996, the peace agreement was silent on the judicial system. There were no civilian or military commissions to assess or revitalize this system. Failing to plan for an integrated judicial system became critical when the Bosniacs arrested and sought to prosecute a noted Bosnian Serb general and his assistant who were alleged to be war criminals but who had not been charged by the International Criminal Tribunal.

The CIMIC staff included attorneys who identified problems in the judicial system and made several recommendations. The first was holding a meeting between the ministers of justice, one Croat and the other Serb, who had not spoken in over four years. But before the contact could even be made, a quick assessment of the system and its needs had to be performed. This included conferences with prosecutors, judges, and officials, which exposed the gravity of the problem.

In January 1996 the judicial system was at best on life support. Neither faction could claim more than one-third of the judges, but both stated that the lack of a full compliment of judges was not the problem. A shortage of law texts and equipment, usually computers, was of great concern as was the geographic jurisdictional problem of crossing the confrontation lines. These lines were sanctioned, and in some cases actually changed, by the peace agreement. Obviously case loads needed to be reviewed and cases transferred to the proper jurisdiction when appropriate.

This last problem presented an ideal nonconfrontational area of discussion. An agenda was agreed to after several preliminary meetings between the CIMIC lawyers and ministerial staffs. In March 1996 the two ministers and their chief assistants met in the Bosnian Serb capital of Pale in a long although cordial session. The ministers even caucused alone after the formal discussion. This historic meeting was followed by a second, again organized and orchestrated by CIMIC personnel.

It was also proposed to the U.S. Agency for International Development (USAID) that a full assessment of the judicial system be made. CIMIC outlined the criteria for the assessment as well as intended products. This was an extensive undertaking with a view toward future assistance from USAID and other NGOs. Obviously this effort would involve some nontraditional roles for the military. The project was endorsed by USAID and completed under the CIMIC staff.

Electoral Politics

The Dayton accords mandated that the election would take place within nine months of the agreement, an energetic goal for any emerging nation. In a country where the ruling factions rarely agree on anything, however, these accords further complicated the mandate by creating a bifurcated administrative system for the election. While OSCE was given the task of conducting the election, the agreement also set up the Provisional Election Commission (PEC) composed of representatives from each of the three warring factions and four international representatives to govern the process.

It is important to recognize several points regarding the electoral process. The last national election had been held in 1991. Since virtually everything changed after that date the purveyors of peace faced the following considerations:

- the central government was powerless
- there was no agreed upon election law, hence PEC had to fashion rules and regulations
- no voter registration data existed
- Dayton prescribed that the 1991 census serve as the base voter registration document
- of the 3.5 million voters, over 1.5 million had relocated according to U.N. estimates
- over 20 foreign countries housed refugee voters totalling approximately 750,000
- of 7,000-plus polling places used in 1991 many no longer existed
- freedom of movement was greatly restricted by the parties
- transportation throughout the country was badly damaged by the war
- telecommunications across the confrontation lines was limited to satellite
- parties often insisted that information be published in their own languages
- division lines between factions were not always practical and agreement had to be reached on exchanges of territory
- controlling political parties in given areas often were hostile to the democratic process
- logistical support to the OSCE mission was limited to one small Swiss military unit.

It was under these conditions that OSCE was asked to administer an election within nine months. The organization was understaffed and inadequately supplied in mid-February 1996. This is not to suggest that OSCE was incapable of conducting an election. Rather, it is indicative of the speed with which things had to occur and of problems in creating a new mission and acquiring workers from OSCE

member states. In fact, the mission included not only its headquarters in Sarajevo but also field offices and regional centers. Therefore OSCE had to open 32 offices in nine months and be prepared for an election no later than September 14, 1996.

By the end of January 1996 IFOR was established and had nearly completed the major task of its mission: separating the parties and ending hostilities. Freedom of movement, however, was another issue as was transferring authority over territory from one faction to another. There was thus a return to normalcy in each region. However, while the military could move about without fear, that was not necessarily the case for civilians or members of NGOs such as OSCE. Crossing various confrontation lines was perilous. In fact, by May 1996 the Bosnian Serb representative to PEC was still insisting on a military escort to attend meetings in Sarajevo. This was in part out of a concern for safety and in part to make a statement about the pre-election environment. OSCE, recognizing that total freedom of movement had not been achieved and not wishing to disrupt these meetings, reluctantly asked the Italian units in IFOR to continue their escort services.

In addition, each faction had its own rules on forming and regulating political parties but the agreement wiped the slate clean and passed this issue to PEC. The only major condition set out in the agreement was the prohibition against indicted war criminals or individuals who would not submit to the jurisdiction of the war crimes tribunal. While such people could not stand as candidates, they remained party leaders for several months, which was a critical problem since the Bosnian Serb leader fell into this category.

Voter Registration

The greatest hinderance, however, was the issue of where (in what municipality) individual votes would be applied. At least 1.5 million voters had relocated. Obviously they were fleeing the conflict. Some went to foreign countries while others moved to areas controlled by soldiers of their own ethnic background. The agreement contained a general rule that individuals would vote where they lived in 1991. While exceptions were allowed, they were not concisely outlined. PEC therefore had to decide whether individuals could vote in and for the area in which they currently resided. If viewed from the Western democratic standpoint, it would seem that voting where one resides would be proper, thereby disavowing the Dayton approach requiring the vote to be counted where one previously lived. Implicit in this discussion was the idea that allowing people to vote where they resided was tantamount to sanctioning ethnic cleansing, as citizens tended to relocate in ethnically homogeneous areas. What evolved under PEC was a complicated mixture of the general rule and exceptions made in favor of voters deciding where they wished to have their ballots apply. These rules were complex and took detailed explanation for even astute party leaders to grasp.

IPTF and SFOR members near Kvezivici.

55th Signal Company, Combat Camera (Angel Clemens)

It then fell to OSCE not only to publish these rules but also to explain them to registration officials and voters and incorporate them into the registration process. What these rules required, therefore, was that all registration sites have complete lists of the 1991 census and forms to allow individuals to register, decide where their ballots were to be counted, and if appropriate obtain absentee ballots. Governance in Bosnia is rather different from the American model. Municipal authority is stronger than in the United States where each succeeding level of government—local, state, Federal—is more powerful. In Bosnia, however, these levels are somewhat the reverse in their relationship to people and their daily lives. Furthermore, political parties exercise much more control in the municipal governments than do local entities in our country.

There also was the matter of voter registration. As mentioned previously, each registration site was to receive a full 1991 census list. For technical reasons, producing that list in a short time became monumental. While this list

was stored in a computer, the census forms had been scanned using 1990s technology. Thus the information suffered many inaccuracies. Furthermore, the task of indexing individuals was burdensome because voters were entered by street in the same order that census takers moved from one house to another. A massive administrative and logistical problem resulted that OSCE could not have been prepared to meet. The printed registration books comprised more than 50 small volumes per set which had to be distributed throughout the country together with millions of registration forms. However, no commercial printer in Bosnia or elsewhere in Europe could produce them by the projected date for commencing voter registration.

Cooperative Effort

Fortunately, IFOR became actively engaged with OSCE. Through CIMIC, which had been working with OSCE since February 1996, arrangements were made for printing the voter list, transportation to Sarajevo, and distribution of the census sets, as well as registration and absentee ballot request forms. It was a cooperative effort between IFOR and OSCE. To grasp the magnitude of what was happening, one must envision a voting list that weighed over a hundred pounds and that required distribution to over a hundred municipalities and several foreign countries. Larger municipalities received several sets of these voting lists and the appropriate number of forms, all in preparation for registration day.

With no printers available, no reliable commercial truckers with the capacity to deliver, and a partially destroyed highway system, it is not difficult to understand what would have happened if IFOR had not participated at this phase of the election process. Within this context, the military role had changed from studied distance to helpful engagement. OSCE was offered military help in election planning and logistic support. CA officers in CIMIC became active members of regional center staffs and OSCE headquarters.

Given the available time and area in which IFOR and OSCE operated, it was inevitable that mutual assistance would be offered and received. Their missions were mutually dependent. Successful elections seemed to equate with a withdrawal of forces. By June 1996, with less than three and a half months to go and with party enrollment underway and voter registration starting, logistical needs were increasing. The staffs of both OSCE and IFOR met to analyze and plan for various eventualities.

These are just a few examples of the preparatory assistance IFOR rendered to OSCE. The campaign and voting presented challenges for the election process including freedom of movement. In addition, there was a lack of communication both during the campaign and on election day. There were no telephone land lines across the confrontation lines. One could not call from Sarajevo to Pale, just 20 miles, using traditional phone lines since the call would cross the border into Bosnian Serb territory. The only way to communicate was via satellite. This potential problem concerned OSCE and IFOR with particular reference to attempted disruptions of campaign events or election day voting.

Another important aspect of the electoral process in which IFOR became actively engaged was education. By June 1996 there were no countrywide radio or television stations. Indeed, Bosnian Serbs used NATO bombing of their television transmitters as an excuse for their inability to reach the electorate. Accordingly, one can understand how IFOR became involved in producing, distributing, and broadcasting educational material.

With each day OSCE became stronger in its ability to administratively hold an election. On the national level the election proceeded on time without disruption. However, its political nature took on greater significance and ultimately caused postponement of municipal elections. Despite this setback, military personnel were more engaged in this traditionally civilian process than was envisioned by either the peace accords or IFOR.

Reconstructing and rejuvenating a war-torn country is no simple task. Successful elections on the national and municipal levels are steps toward stabilization. So, too, is a functioning judicial system. In both areas the skill of civil affairs soldiers made an important contribution to peace. The military role in this process was aptly termed Joint Endeavor. Within a short time of their arrival, NATO and other forces became part of a combined civil-military endeavor. In the final analysis, however, peace will only be secured through cooperation by the world community, military forces, and the people of Bosnia-Herzegovina. JFQ

War Criminals—
Testing the Limits of Military Force

By F. M. LORENZ

The coming year will see a critical phase in the international effort to bring peace to Bosnia and Herzegovina. Stabilization Force (SFOR) has an ambitious mission that will continue into summer 1998. Although the war has ended, efforts to build institutions and promote reconciliation have faltered.

> *Very near the heart of all foreign affairs is the relationship between policy and military power.*
> —McGeorge Bundy

The promises of the Dayton peace agreement are largely unfulfilled after more than a year and the region has drawn into ethnic enclaves divided by the "inter-entity boundary line" and long-standing hatred. A critical milestone will come with local elections set for September 1997.

One of the most controversial aspects of the peace process has been the NATO policy for arresting those indicted by the International Criminal Tribunal for the Former Yugoslavia (ICTY). After three years the tribunal has only a handful of indicted war criminals in confinement; most are believed to be at large in the former Yugoslavia. There have been public calls for NATO to take an aggressive role in apprehending them.[1] Many political pundits in the United States claim that there can be no peace unless these war criminals are brought to justice and that their very freedom is an impediment to refugee resettlement and reconciliation. Media reports indicate that NATO has often refused to take action when notorious suspects flout the law. As part of plans for its continued mission in Bosnia, NATO is said to be considering a new military policy on indicted war criminals.

This situation raises questions about the limits of military force that must be viewed within the broader context of U.S. foreign policy. This article addresses the following issues: What is NATO military policy with respect to indicted war criminals? Is it consistent with both U.S. foreign policy and international law? Is it effective? And if a new policy is adopted can it be implemented to promote policy objectives in the Balkans?

Background

The NATO military mission in Bosnia commenced in December 1995 after U.S. leadership made possible the first real cease-fire after four years of

Colonel F. M. Lorenz, USMC, holds the Marine Corps chair at the Industrial College of the Armed Forces and was senior legal advisor for Operation Restore Hope.

war. Dayton implemented U.S. policy by seeking to unify Bosnia in a single multi-ethnic state. But the accords also divided the country into two entities based on ethnic differences. An essential component was creation of Implementation Force (IFOR) to execute military aspects of the agreement. The initial zone of separation between entities as well as the cease-fire and demobilization provisions were enforced by IFOR. The civil terms of the Dayton accords are much broader in scope. They include the conduct of free and fair elections and establishment of an effective national government. IFOR achieved the key military objectives during the first four months of the operation. While the short-term political objectives of saving lives and stopping the war were clearly met, the long-term civil objectives have proven more formidable. Few refugees have been able to return home despite the promises made at Dayton. Local political leaders have created various barriers including road blocks and a maze of red tape. But by and large, most citizens simply refuse to live alongside their recent enemies. SFOR has the responsibility of building on the IFOR mandate into summer 1998. The challenge will be to capitalize on past success and provide the stability to implement the civilian objectives of the peace process.

military force has been used historically as an instrument of foreign policy

Military force has been used historically as an instrument of foreign policy in a wide range of situations from war to "forceful persuasion" to humanitarian intervention. It is a fundamental principle of foreign policy that military means must be carefully tied to overall political objectives.[2] As indicated in U.S. national security strategy, there are five basic components of foreign policy at stake in the former Yugoslavia:

- sustaining a political settlement that preserves Bosnia's territorial integrity and provides a viable future for all its peoples
- preventing the spread of the conflict into a broader Balkan war that could threaten both allies and the stability of new democratic states in central and eastern Europe
- stemming the destabilizing flow of refugees
- halting the slaughter of innocents
- supporting the key role of NATO in Europe while maintaining the U.S. role in shaping European security architecture.

A review of the Dayton agreement provides additional insight into U.S. political objectives. Its preamble sets out the overall purpose: "to bring an end to the tragic conflict" and to "promote an enduring peace and stability." The military annex, 1A, describes the mission in terms of cessation of hostilities, redeployment of forces, enforcement of the zone of separation, and establishment of military commissions. The other annexes, 2–11, address civilian implementation of the agreement under supervision of the high representative. Civilian tasks include monitoring elections, returning refugees and displaced persons, promoting human rights, and creating an international police task force. Some analysts think that the political and military goals established at Dayton are essentially irreconcilable. Many have noted contradictions: a military objective to partition the country and a political one to unify it into a multi-ethnic state. It should not be surprising that in the first year implementation of the agreement can be viewed as a military success but a political failure. Still, U.S. involvement has resulted in achievement of most of the short-term objectives, and SFOR will have an additional opportunity to provide a climate for peace.

The Limits of Force

Implementation of the Dayton accords in Bosnia raises serious questions about the limits and effectiveness of military force in peace support operations. Not all of the Dayton objectives are amenable to a military solution. Force is a blunt instrument more suited to war than to the complex world of peace operations and military operations other than war (MOOTW).[3] Creating a demilitarized "zone of separation" in Bosnia is a clear and achievable military task. But enforcing the return of displaced persons to their homes, guaranteed by Dayton, is a different issue. Some have called for SFOR to enforce refugee resettlement. This summons for an easy military solution demonstrates a lack of understanding of the practical limits of force.

SFOR has 31,000 troops in Bosnia, and general security is within its capability. But more than two million persons were displaced in Bosnia and Herzegovina during four years of war. Most vacated homes have been reoccupied by new residents and ethnic hatred still runs deep. Local citizens are simply not willing to allow a peaceful return of their recent enemies. Moreover, Muslim authorities are reported to be planning a return of their own refugees to areas in Serbska that have military significance, which is not lost on local citizens. A SFOR patrol of a dozen men is not likely to stop an unarmed crowd of 200 Serbs intent on burning Muslim homes. Although troops can provide added security and respond to known threats, it would not be feasible to place a 24-hour armed guard on thousands of homes. The movement and return of refugees is essentially a civilian task best left to the people and local officials.

The United Nations and NATO

ICTY was created by U.N. Security Council resolution 827 of May 25, 1993. The declared purpose was to prosecute persons responsible for serious violations of international humanitarian law. The United Nations called for all states to cooperate fully with the tribunal[4] and the Dayton agreement requires its parties to collude in the matter of indicted war criminals.[5] At the time of the accords some seventy indictments had been returned, most for Bosnian Serbs. But ICTY has no police authority to search out or apprehend indicted war criminals. Like the NATO force it must enter with the permission of the sovereign nation where it operates. The international police currently in Bosnia are unarmed and perform only advisory and training

IFOR apprehending Serb looters, Sarajevo.

Joint Combat Camera Center

Bosnian supreme court building.

F.M. Lorenz

roles. Hence there is a natural tendency to turn to SFOR to gain custody of the criminals.

There is no discussion of the military policy toward indicted war criminals in the Dayton agreement. The NATO force—first IFOR, now SFOR—is led by the U.S. commander but policy is set by the 16-member North Atlantic Council (NAC). The policy for dealing with indicted war criminals was carefully formulated by NAC before the first IFOR soldier set foot in Bosnia. The initial policy was part of the rules of engagement for IFOR. It essentially provides that indicted war criminals will be apprehended if encountered by NATO personnel in the course of their normal duties. It does not permit action to hunt them down nor does it require apprehension if prudence dictates otherwise. Few would argue that small, lightly armed SFOR elements should attempt to apprehend heavily guarded war criminals.

The policy on indicted war criminals is only one part of the overall NATO military policy in the Balkans. Though widely criticized in the media as unreasonably timid, the policy has served well to maintain stability and keep the criminals on guard and relatively isolated. It allows time for diplomatic and economic initiatives to permit the individual nations to turn criminals over to the tribunal. Perhaps most important, NATO has a unified policy that sets effective limits on military action. It is consistent with U.S. political objectives, and the war has ended—at least for now. In that sense the policy has been highly effective.

International Law

There is no precedent for the current situation in Bosnia and Herzegovina. Historically, the trial of war criminals has been "victors' justice" after international armed conflict. The occupying force maintains full control of police and civil institutions. ICTY was created by the international community while the conflict was still under way. In March 1996 Amnesty International, a private human rights group, issued "an open letter to IFOR commanders and contributing governments" concerning the search for war criminals. It criticized IFOR for "refusing to search for persons suspected of genocide, other crimes against humanity, and serious violations of humanitarian law." The letter cited reports that IFOR troops had encountered several indicted individuals but failed to arrest them. It further maintained that the IFOR failure to search for suspects violates the Geneva Conventions of 1949[6] and Security Council resolution 827 and is inconsistent with Dayton.

Both the Dayton and Geneva obligations with respect to indicted war criminals apply to the states in the former Yugoslavia, not NATO itself. IFOR was not an occupying force in Bosnia, and SFOR has the same status. The NATO force is operating within

sovereign nations that have given it permission to carry out the specific military tasks of Dayton. Searching for suspects is not included. In fact, an agreement had to be negotiated between NATO and Bosnia and Herzegovina to turn criminals over to ICTY in the event they were apprehended by IFOR. There has been regular cooperation between NATO and ICTY, including security for investigative teams and temporary guard of alleged mass graves. In March 1996 IFOR delivered two Serb suspects being held in Sarajevo to The Hague in response to a formal ICTY request. There is no legal requirement for NATO to actively pursue indicted war criminals, and the conduct of IFOR has been entirely consistent with international law.

there is no legal requirement for NATO to actively pursue indicated war criminals

Lessons from Somalia

U.S. forces arrived in Somalia in December 1992 as part of a major international humanitarian intervention, Operation Restore Hope. The narrow military mission at the outset was to provide security for delivering relief supplies. After the mission was turned over to the United Nations in May 1993 it was extended to disarming the factions and rebuilding civil institutions. American forces remained on the scene under U.S. command to provide military support. In the summer of 1993 both the United States and the United Nations underestimated the level of backing Mohammed Farah Aideed would muster within his fiercely loyal clan. Although vilified in the West he became a national hero and potential martyr when the head of the U.N. mission put a reward on his head. Soon the United States began commando style operations to seize him. At that point it crossed what has since been called the "Mogadishu Line" by being perceived as supporting one faction by attacking the leadership of another. A failure to coordinate with the United Nations the final decision to assault Aideed's stronghold at the Olympic Hotel in October 1993 contributed to the disaster that led to a reversal of U.S. policy and withdrawal.[7]

The collapse of U.S. policy in Somalia was not due to a lack of political direction. One day after the ambush of Pakistani peacekeepers in June 1993, the Security Council called for the "immediate apprehension" of those responsible.[8] American forces were increased in preparation for commando operations against Aideed and his faction. U.S. Ambassador to the United Nations Madeline Albright went directly to the public to gain support for a tough administration policy.[9] Her position is worth noting because of her current role in formulating policy for indicted war criminals in Bosnia.

As pressure mounted, the U.S. commander with the most experience in Somalia, Lieutenant General Robert Johnston, USMC, suggested enlisting Aideed's rivals to undercut his influence. "Political pressure is the best way to reduce Aideed's power. If you end up fighting him you play to his strong suit."[10] These remarks were made just a week before the fateful assault at the Olympic Hotel in Mogadishu that left 18 Americans dead. Despite clear political direction, the policy proved to be misguided and unsuitable for a region embroiled in tribal/ethnic conflict. Perhaps the most important lesson of Somalia is that military force should never be substituted for effective diplomacy. As an ironic footnote, Aideed eventually died as a result of a battle with his long-time adversary, Ali Mahdi Mohammed. The removal of Aideed did nothing to restore peace to Somalia and the country is still divided by factional fighting

Economics and Diplomacy

Before considering a new military policy it is essential to review the other elements of U.S. national power available to influence action in the former Yugoslavia. One is economic sanctions. They played a major part in isolating the Serbs and forcing them to the bargaining table at Dayton. But they have been underutilized in obtaining indicted war criminals. Those who demand military action rarely mention this option as an alternative or means to be used in combination with military power. They also ignore a fundamental principle of strategy laid down by Sun Tzu: It is better to subdue the enemy without fighting than to be the victor in a hundred battles.

U.S. policy, both economic and diplomatic, has been most effective when coordinated with NATO allies. But there is at least one area where it has evolved independently. The "equip and train" program for the combined Croat and Muslim Federation has proceeded despite opposition in Europe where there is a concern that more weapons will ultimately destabilize the region. The first delivery of tanks and heavy weapons was made to the Federation army in December 1996 after all conditions were met. One of the last requirements was the removal from the Bosnian government of an individual with known sympathies to Iran. But there has been no effort to tie arms shipment to the surrender of indicted war criminals in Croat-held areas which may reveal something about the relative priority of U.S. objectives. America could be seen as favoring the Muslims and Croats by implying that surrender of indicted war criminals is essentially a Serb problem. As in Somalia, such perceptions can undermine peace processes. A coordinated economic and diplomatic strategy with the threat of military force stands the best chance of bringing the war criminals to justice.

The Scale of Justice

The ICTY role in Bosnia is unique because the process is designed not only to establish guilt or innocence but to contribute to the peace process itself. The war was still in progress when the tribunal was established, and some hoped that it would hasten an end to years of bloodshed. But the indictment of Radovan Karadzic (the former president of the Bosnia Serbs) and Ratko Mladic (once the head of the Bosnian Serb military) failed to stop one of the most brutal acts of the war, the slaughter of Muslim civilians at Sebrinica in July 1995. ICTY did not drive the Serbs to the peace table; it was the fact that in November 1995

Guarding suspected site of mass grave near Ceparde, Serbska.

55th Signal Company, Combat Camera (Glenn W. Suggs)

they were militarily and economically at a dead end.

Despite the low number of individuals in custody ICTY has made historic gains in returning indictments for genocide and crimes against humanity. The world is witness to the daily testimony of unspeakable brutality. Public disclosure will likely have much the same effect as the truth commissions in South Africa. The decision by Pretoria to create truth commissions rather than conduct criminal trials was a compromise designed to avoid further discord. Many defendants there will be granted amnesty, and the hearings themselves are expected to promote reconciliation in a nation long torn by factional strife. Even without more arrests the work of ICTY has resulted in a revival of international humanitarian law and affirmed the customary unwritten law that binds all states to international standards of behavior.

Although only a handful of indicted war criminals are now in the custody of the tribunal there has been steady progress. The first sentence was handed down in early December 1996. Hopefully, shifting political loyalties in the former Yugoslavia will bring more arrests. Reports from the Republic of Serbska indicate that General Mladic has been removed from office. The key indictees have been "branded with the mark of Cain," serving as some measure of retribution.

Elections

Many observers contend that the national elections in Bosnia were a sham: The conditions for free and fair voting simply did not exist. There is general agreement that the results have solidified the hold of the nationalist parties. Much is at stake in the local elections now set for September 1997. Precipitous military action by SFOR could easily inflame the already deep ethnic hatred and confirm what many undecided voters have long suspected. The "international community" is out to destroy their hard-won independence. This is particularly true for the Serbs, who view themselves as a nation of victims who must fight for survival. Even if the supporters of Karadzic and Mladic were to quietly watch their leaders be carried off by NATO troops, the certain result in Serbska would be to further radicalize the population and increase support for Karadzic's party. A likely result would be hostage-taking by the Serbs and increasing military confrontation with SFOR troops. This pattern could easily be repeated should similar action be taken in Muslim or Croat areas of Bosnia. Although the national elections may have solidified the control of the nationalist parties, there was little violence. This in itself may be a first step in national reconciliation.

military action in Bosnia similar to that initiated in Somalia could destabilize the entire peace process

A New Policy

Military action in Bosnia similar to that initiated in Somalia could jeopardize success to date and destabilize the entire peace process. An effective policy will require diplomatic, economic, and military power. There are six elements to be considered in developing a new NATO policy concerning indicted war criminals.

Develop clear political objectives. A major factor in the military success thus far has been a clear and narrowly-defined mission. If there is to be a new mission it must be linked to political objectives. It is not enough to seek the "arrest" of war criminals. This fails to provide sufficient guidance to develop a coherent military policy. If combat operations to search out and seize the indictees are to be directed, that mandate must be crystal clear. Up to now the force in Bosnia has received mixed political signals. One objective is to separate factions and another is to unify them. It may not be possible to do both at the same time.

Develop a unified approach. The impact of the NATO war criminal policy on coalition unity should not be overlooked. In Somalia many of the national contingents that were part of the U.N. operation had their own orders not to participate in the aggressive efforts to apprehend Aideed. When

IFOR lawyers meeting with local justice officials.

F.M. Lorenz

U.S. Rangers were under attack in October 1993 the Malaysian force had the only armored vehicles in Mogadishu capable of mounting a rescue effort. But they refused to engage pending approval from Kuala Lumpur, and that took more than five hours. In Bosnia some elements of SFOR will be more vulnerable to retaliation from the Serbs should there be a backlash to NATO action to apprehend war criminals. The headquarters of Karadzic is in the French sector of SFOR, and military action there would have to be carefully coordinated. A new policy has the potential to fracture the coalition unless all national contingents are fully aware of the risk and are prepared to take decisive action.

Once a U.S. objective concerning indicted war criminals is determined, our allies must be consulted to develop a unified position. Not every NATO ally may find the same moral imperative in apprehending them. The following questions should be included in the debate. Can peace take hold without more war criminals in custody? Is NATO willing to sacrifice short-term stability to make apprehensions?

There is a major distinction between Karadzic and the lesser known indicted war criminals who wield little power and influence. A strong argument can be made that Karadzic is an obstacle to peace, but that argument weakens for most of the others. The divisions that separate Bosnians are much deeper than the issue of indicted war criminals, and it is difficult to predict what impact the arrest of ten, twenty, or sixty more would have. Those who believe that apprehension will bring peace may not understand the complexity of the situation.

Effectively use diplomatic and economic elements of national power. Up to now American diplomacy has been ineffective in apprehending war criminals. The pressure that forced the parties to negotiate at Dayton has dissipated. But renewed efforts could weaken nationalist parties and undermine support for Karadzic and Mladic. The Byzantine political situation in the Republic of Serbska may be ripe for a shift in power. Economic sanctions may be the most powerful means of achieving policy goals in the former Yugoslavia. Serbia is reeling from years of sanctions and the government of Milosovic is threatened. Although the primary sanctions have been removed, there is still the opportunity to link economic aid to the delivery of indicted war criminals. The new High Representative in Bosnia has issued a warning concerning war criminals indicating that those who do not fulfill the commitments made at the negotiating table will not enjoy his support.

Military action used in isolation is certain to enhance the status of the radical nationalist parties and make heroes of Mladic and Karadzic. A carefully crafted policy, coordinated with a military threat, has the best hope of bringing indicted war criminals to justice.

In the first weeks of August 1997 the Clinton administration made a renewed diplomatic effort in the Balkans. Time is running out on the plan to remove all U.S. ground troops from Bosnia by summer 1998. Ambassador Richard Holbrooke, the architect of the Dayton accord, was sent back to the Former Yugoslavia with a direct message. Unless Karadzic is removed from a position of influence he will be arrested. This effort was tied to a recent military initiative, the special police in Serbska being classified as a military force and put under SFOR control. The special police have been Karadzic's primary protection, and this move could dramatically increase his vulnerability. The real question is whether this action will strengthen or weaken Karadzic's hand in the Machiavellian world of Serb politics.

Develop a military strategy. Once the political objectives are set a strategy can be devised. There may be a range of options, from the status quo of a general military presence to increased presence and patrols to decisive commando raids on selected military headquarters. An effective military strategy will have to deal with civilian disturbances and hostage taking, all proven tactics of the Bosnian Serbs. It is important to recall that SFOR has fewer troops today than IFOR and action in one part of the country is likely to provoke reactions elsewhere. A comprehensive plan of action at the operational and tactical level will be necessary.

Choose the right force. After a strategy is devised it is necessary to ensure that we have the right force for the mission. In Somalia in 1993 the United States correctly recognized that the mission changed from providing general security to conducting assaults in

urban terrain. Army special operations forces (Rangers) were tasked. There may be a requirement for a tactical helicopter assault on the heavily defended military headquarters of Mladic or a commando raid on Karadzic's capital in Pale. With the right force and mission we are well on the way to accomplishing the objective.

Most soldiers are not trained for law enforcement. Battle skills are not easily translated into crowd control. Violence and prompt action are stressed in combat training but restraint and tact are required in peace support missions. These factors can often be overcome with the right training and assignment of achievable missions. The initial U.S. contingent in Bosnia was comprised primarily of the 1st Armored Division, a heavy force designed for mechanized combat in open terrain. Once it became clear that there was no organized military opposition, the force was modified to include a greater mix of light infantry. Military police were added during national elections. The U.S. force in Bosnia responded with flexibility to new tasks and is adequate for the present mission; but this could change overnight if hunting down war criminals is added.

On July 10, 1997 NATO policy on indicted war criminals took a new turn. British SFOR forces conducted a military operation that killed one suspect and apprehended another. Both individuals were well known and serious impediments to peace in that sector, and careful coordination with ICTY was required, including the preparation of "sealed indictments" to preserve the element of surprise. NATO officials maintained that this did not signal a change in overall policy, but there is no doubt that the pressure on the indicted war criminals has increased.

Have the will to carry through. If the use of force involves increased patrols and pressure tactics U.S. troops must prepare for escalation and increased risks. And if they conduct commando raids to apprehend Serb leaders they will be committed to combat. Defense analysts may see a moral imperative in pursuing indicted war criminals, but that view may not be shared by Americans whose sons and daughters are serving in Bosnia. Congress has substantial misgivings about U.S. presence there, and a bill has been introduced requiring the withdrawal of troops before the date committed to by the administration. If there is to be a new policy, the American people and Congress must be prepared for combat deaths in the name of international justice. Such a position poses a dilemma because its public debate would likely erase any element of surprise.

The current NATO policy concerning indicted war criminals in the Balkans is not the result of timidity or indifference. It reflects painful compromise and recognition that not all our objectives can be immediately realized. Though often criticized and misunderstood, it has effectively served the ends of peace and stability in the former Yugoslavia. Still, the call for more decisive action may increase. There is justifiable concern that the ICTY mandate will expire without more individuals in custody. If the pursuit and apprehension of indicted war criminals is to be an objective in the conduct of peace operations, policies must be carefully developed and executed. Finally, the mission must not be assigned without the intention of seeing it through. An indecisive policy is worse than no policy at all and will ultimately undermine U.S. and NATO credibility. A coordinated approach that includes diplomatic, economic, and military instruments of power will be most effective in building a lasting peace. **JFQ**

NOTES

[1] Theodor Meron stated, "given the military muscle IFOR now possesses, it is a disgrace that the principal indictees have not been detained, let alone delivered up to The Hague." See "Answering for War Crimes: Lessons from the Balkans," *Foreign Affairs*, vol. 76, no. 1 (January/February 1997), pp. 2–8.

[2] "The political object is the goal, war is the means of reaching it, and means can never be considered in isolation from its purpose," Carl von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976), p. 87. See also Charles W. Kegley and Eugene R. Wittkopf, *American Foreign Policy, Pattern and Process,* 5th ed. (New York: St. Martin's Press, 1996).

[3] Joint Warfighting Center, *Joint Task Force Commanders' Guide to Peace Operations* (Fort Monroe, Va.: Joint Warfighting Center, 1995), p. 45.

[4] "All states shall take any measures necessary under their domestic law to implement the provisions of the present resolution and the statute, including the obligation of states to comply with requests for assistance or orders issued by a trial chamber under article 29 of the statute" (Security Council resolution 827, section 4).

[5] The military annex (1A) calls for parties to the agreement "to cooperate fully with any international personnel, including investigators of the tribunal." The parties included the Republic of Bosnia and Herzegovina, Federation of Bosnia and Herzegovina, Republika Serbska, the Republic of Croatia, and Federal Republic of Yugoslavia.

[6] These provisions require state parties "to search for persons alleged to have committed, or to have ordered to be committed, such grave breaches, and shall bring such persons, regardless of their nationality, before its own courts," the courts of another state, or an international criminal court (see Geneva Convention no. I, art. 49; no. II, art. 50; no. III, art. 129; no. IV, art. 146).

[7] Robert Oakley and John Hirsch, *Somalia and Operation Restore Hope* (Washington: U.S. Institute of Peace Press, 1995); Kenneth Allard, *Somalia Operations: Lessons Learned* (Washington: National Defense University Press, 1995).

[8] Security Council resolution 837 did not mention Aideed by name but it clearly applied to him. Jonathan Howe, the U.N. special representative, took prompt action by putting a price on his head, increasing U.S. military efforts to apprehend him.

[9] "The Security Council has responded by ordering the capture, detention, and trial of Mr. Aideed. Failure to take action would have signaled to other clan leaders that the United Nations is not serious. Advocates of appeasement seem to forget that last year the United Nations tried to cooperate with Mr. Aideed and his counterparts. It did not succeed." Reported in "Yes, There Is a Reason To Be in Somalia," *The New York Times*, August 10, 1993, p. A-19.

[10] "Pentagon Changes Its Somalia Goals as Effort Falters," *The New York Times*, September 27, 1993, p. A-1.

What Exactly Is Jointness?

By LAWRENCE B. WILKERSON

The last thirteen of my thirty-plus years as a military officer have been spent in joint duty assignments. For six years I have actually taught the essentials of jointness at the intermediate and senior levels of professional military education (PME), an experience which has provided many opportunities to discuss the nature of jointness with students. What has come out of those discussions is that jointness is *understanding* broadly what your fellow soldiers, sailors, airmen, and marines bring to the battle and *trusting* them to do it right and well—and their feeling the same way about you. All frills and lobbying aside, the essence of jointness is understanding and trust.

jointness is not greater than the sum of its parts—it is at best *the* sum of its parts

As General Colin Powell stated in the first edition of Joint Pub 1, "joint warfare is team warfare." But what about *seamlessness*, *synergy*, *joint doctrine*, *interoperability*, and all the other buzzwords? Let's examine some of the more prevalent ones.

Colonel Lawrence B. Wilkerson, USA, is deputy director of the Marine Corps War College.

Jointness is not seamless. It will have as many seams as the fallibility of human nature and technology impose. Indeed, to regard seamlessness as an achievable attribute of military operations is arrogant and dangerous. It is the sort of attitude that commits assets to the wrong purpose, gets people killed needlessly, loses wars, and devastates peace operations.

When it is achieved jointness is not greater than the sum of its parts—it is at best *the* sum of its parts. In fact the sum is most often reduced by that inevitable human element which does not understand or trust and therefore functions imperfectly if at all, and the mechanical parts that seem to achieve a 60 percent success rate on a good day. And there will always be such factors, human and mechanical, to contend with.

Jointness is not created by doctrine, joint or otherwise. It is brought about by people, good and bad. Like most things in life, it is created more successfully by a higher proportion of good people well trained in their service capabilities and how to employ them. Words printed on paper, no matter how attractive, are largely meaningless in the greater scheme of things. Common tactics, techniques, and procedures are vital to training. Just as critical to success in battle are people who while operating in accordance with their training can do *exceptional* things. Such acts, both large and small, are what bring order to confusion and win conflicts. One of the strangest paradoxes of human behavior is that people accustomed to studied routine must be capable of quick and decisive departure from that mind set

DOD (Helene C. Stikkel)

to be repeatedly successful. Order must tend to chaos—indeed, teeter next to it with an exquisite sense of balance—in order to intuitively adapt, triumph, and endure.

Jointness is not produced by the ability of systems to share information, ammunition, fuel, or a host of other things, though this capacity—*interoperability*—is a vital technical aspect of deepening trust. Faith in a buddy's ability to help in a pinch is difficult to muster if one cannot even communicate. Of all the misunderstood and misdefined components of jointness, interoperability is the most important. It is the technical side of trust. Without it trust evaporates quickly in the heat of combat.

True jointness is not imparted by fiat. It is created the same way as the bonds of combat: in the cauldron of shared dangers, decisions, and death. Henry V did not stroll around the campfires on the eve of Agincourt to instill doctrine in the hearts and minds of his men. "A little touch of Harry in the night" was far more complex than any directive or written instruction. It was also far more integral to the stunning victory gained by the English over the French on the following day.

How does one teach jointness? Specifically, how do war and staff colleges—for the latter institutions are where jointness as described above truly fits into our PME system—best develop understanding and trust in students?

For an answer I reviewed the seminars that my former students consistently rated highest. They turned out to be the sessions in which the students had to use their own expertise to sort out a complex political-military problem, then give an appreciation of it as well as the solution. In some cases they had to execute that solution. This ranged from contemporary case studies of Urgent Fury (Grenada), Earnest Will (reflagged Kuwaiti tankers), Eagle Claw (Iranian hostage rescue), UNISOM II (Somalia) to full-fledged crisis wargames that lasted several days, the most successful of which dealt with the complex deployment of U.S. forces to the West Bank to provide humanitarian relief following massive refugee flows into that sector. All sessions were highly rated in each pedagogical category including learning jointness.

As I read and re-read the student critiques, the connection became apparent: that short of the cauldron of combat, the seminar can be as searing and instructive in its own way, given the right context.

> When a team takes to the field, individual specialists come together to achieve a team win. All players try to do their very best because every other player, the team, and the home town are counting on them to win. So it is when the Armed Forces of the United States go to war. We must win every time. Every soldier must take the battlefield believing his or her unit is the best in the world. Every pilot must take off believing there is no one better in the sky. Every sailor standing watch must believe there is no better ship at sea. Every marine must hit the beach believing that there are no better infantrymen in the world. But they all must also believe that they are part of a team, a joint team, that fights together to win. This is our history, this is our tradition, this is our future.
>
> —Colin L. Powell, "Message from the Chairman," in Joint Publication 1, *Joint Warfare of the U.S. Armed Forces* (November 11, 1991)

That was a demanding situation confronted by a team possessing diverse service capabilities in which every member was well trained. An observation by a former Commander in Chief Pacific, Admiral William J. Crowe, drives this point home. In 1985, before becoming the Chairman, he remarked: "I want people for my staff who are thoroughly proficient in their own service's capabilities. Everything else will follow." Proficiency in one's own service capabilities is the *sine qua non* of jointness. Without it there can be no trust or understanding. The "everything else will follow" depends first on the individual and second on the frequency and quality of his exposure to combat and the seminar room, the latter being all that is available in peacetime.

proficiency in one's own service capabilities is the *sine qua non* of jointness

Trust and understanding are derived from service competence. That is the *only* foundation on which genuine jointness can be built. Threaten that and you threaten jointness. That is why the increasing power of the Joint Staff is so troublesome—not now or over the next year but for the future. Thus far that growing power has not impinged upon the flourishing of separate service cultures or the healthy competitiveness which they naturally engender, but given its current direction it will.

Even in apparently insignificant areas signs of the increasing power of the Joint Staff and the potential for abuse can be found. The proposed introduction of PME learning objectives for force protection and risk management is a case in point. The Joint Staff maintained that military education policy should be changed to reflect specific PME learning objectives for these subject areas; others held that such a sudden change contradicts good education policy. These opponents argue there is a more satisfactory way of evolving an area of educational focus, namely the subject area of emphasis method. Quality education is best served by gradual change that is carefully evaluated rather than by rapid-fire, knee-jerk change that often is rooted in political expediency (which is the atmosphere that influences decisions by the Joint Staff). In this instance the education community won the argument; however, the trend seems to be moving in the other direction. The momentum is on the side of the Joint Staff.

This is not necessarily bad. After all, one objective of the Goldwater-Nichols Act was to improve the Joint Staff—something that has been done remarkably well. Indeed, the Joint Staff is the finest, most efficient staff in the Armed Forces—perhaps in the world. As the classic Greek dramatists warned, however, such excellence can contain the seeds of its own destruction.

The criticism offered here is not related to the inordinate and largely American fear of the dreaded general staff. Most people who harbor such concerns today do not understand the very concept they protest. My argument is more closely related to what Douglas Southall Freeman called "the odds." In short, there are only so many truly excellent people in any enterprise and to concentrate them at a single point in an organization may well create an imbalance of skill which endangers the health of the entire organization. The efficiency and quality of the Joint Staff have to an extent been achieved at the expense of service staffs and—while few admit it—to the great consternation of the civilian staff serving the Secretary of Defense who, by the very nature of their appointed status, cannot match the energy and level of expertise of the Joint Staff.

The Secretary's effort to create a schoolhouse for civilians under the Defense Leadership and Management Program is aimed in part at redressing this situation. The lead paragraph of the directive issued on the program in April 1997 reveals much: "This directive...establishes a DOD-wide framework for developing future civilian leaders with a DOD-wide capability in an environment that nurtures a shared understanding and sense of mission among civilian employees and military personnel."

The growing power of the Joint Staff at the expense of service staffs may be nothing to worry about. The primary concern is that with the declining quality of service staffs, the nurturing of service competence, which is the foundation of jointness, will fall off. Therefore, keeping a wary eye to that possibility might be wise. *Power corrupts, and absolute power*—but you know how the old aphorism goes.

JFQ

Thinking About Revolutions in Military Affairs

1st Combat Camera Squadron (James D. Mossman)

By WILLIAMSON MURRAY

The term *revolution in military affairs* (RMA) is a buzzword inside the Beltway and among academics interested in defense affairs. As Dennis Schowalter noted at a recent conference, "RMA has replaced TQM [total quality management] as the acronym of choice" among members of the Armed Forces. One suspects that much of this enthusiasm, which rests upon only the slightest knowledge of the historical record, may distort as much as it helps in thinking about military change and innovation. Yet one must also admit that military events of late suggest major changes in technology and weapons with substantial implications for conducting war in the next century.

Williamson Murray, professor emeritus at The Ohio State University, is the Charles A. Lindbergh Visiting Professor of Aerospace History at the National Air and Space Museum, Smithsonian Institution.

This article suggests how one might think about RMAs of the past and the implications of the historical record for the future. The views reflect the influence, comments, and thoughts of colleagues in the historical profession.[1]

First, historians have done relatively little work on RMAs. Michael Roberts introduced the idea of a single military revolution in his inaugural lecture at Queens University Belfast in 1955. Thereafter until 1991, interest in *the* military revolution was focused on the 16th and 17th centuries; early modern historians argued among themselves about whether there was such a revolution and, if so, when it occurred and what form it took. That debate continues. Since the mid-18th century, however, military historians have concentrated on other issues such as innovation, effectiveness, adaptation, organizational behavior, or—the bread and butter of the profession—battle

Figure 1. Possible RMAs

14th century
—longbow: *cultural*

15th century
—gunpowder: *technological, financial*

16th century
—fortifications: *architectural, financial*

17th century
—Dutch-Swedish tactical reforms: *tactical, organizational, cultural*
—French military reforms: *tactical, organizational, administrative*

17th–18th centuries
—naval warfare: *administrative, social, financial, technological*

18th century
—British financial revolution: *financial, organizational, conceptual*
—French Revolution: *ideological, social*

18th–19th centuries
—industrial revolution: *financial, technological, organizational, cultural*

19th century
—American Civil War: *ideological, technological, administrative, operational*

late 19th century
—naval war: *technological, administrative, cultural*

19th–20th centuries
—medical: *technological, organizational*

20th century
—World War I: combined arms: *tactical, conceptual, technological, scientific*
—*Blitzkrieg*: *tactical, operational, conceptual, organizational*
—carrier war: *conceptual, technological, operational*
—strategic air war: *technological, conceptual, tactical, scientific*
—submarine war: *technological, scientific, tactical*
—amphibious war: *conceptual, tactical, operational*
—intelligence: *conceptual, political, ideological*
—nuclear weapons: *technological*
—people's war: *ideological, political, conceptual*

histories. Modern historians quite simply have not been very interested in military revolutions.

In a sparsely attended session at the March 1991 meeting of the Society of Military History, Clifford Rogers suggested that there was not one military revolution but a series that reached from the middle ages to the present day. He said they may have begun as early as the 14th century and continued with increasing frequency as one neared this century. Not surprisingly there has been a rush to examine virtually everything from the strategy of Edward III to *Blitzkrieg* operations in the light of what we call *revolutions in military affairs*. The crucial point is that the historical record is not yet in; and until there is detailed research on the subject most commentaries may be distortive. At a recent conference, I listed possible RMAs along with the driving forces behind them. Although not inclusive, it suggests the complexities and ambiguities found in the historical record (see figure 1).

The list suggests a number of points. First, given the enthusiasm for describing the coming RMA as technological, the historical record suggests that technological change represents a relatively small part of the equation.[2] Moreover, military history over the last eighty years offers many cases in which forces with inferior technology have won conflicts. The record further suggests that the crucial element in most RMAs is conceptual in nature. In the breakthrough on the Meuse, for example, the German advantage was a combined arms doctrine resting on a thorough and realistic appraisal of the last war. Their opponents had not developed such a doctrine.[3]

In fact there is only one example on the list of possible RMAs that is entirely technological: nuclear weapons. But even here there is some ambiguity since the impact of nuclear weapons has been almost entirely political except for their first use against the Japanese. Outside of great power competition, nuclear weapons have *not* changed the nature of warfare. What the historical record implies, therefore, is that technology has played only one part in these revolutions, and frequently a relatively insignificant part.

Secondly, the record suggests that historians and others using the concept should rethink RMA terminology. Even the idea of a series of revolutions distorts history and misses a number of complex and ambiguous interactions. The current reading of the evidence indicates a linear series of discrete revolutions that are readily discernable and therefore easily managed.

Military Revolutions

Evidence, however, points in another direction.[4] There appear to be two distinct historical phenomena involved in radical innovation and change. The first can be called military revolutions. These were by far the more important, for they fundamentally changed the nature of warfare in the West. There appear to have been four (two occurring at the same time): creation of the modern, effective nation-state based on organized and disciplined military power in the 17th century; the French Revolution and the industrial revolution beginning at the same time during the period 1789–1815; and World War I, 1914–18. We might compare them in geological terms to earth-

Naval Historical Center

Battery Sherman, Vicksburg.

quakes. They brought with them such systemic changes in the political, social, and cultural arenas as to be largely uncontrollable, unpredictable, and above all unforeseeable. Therefore those who expect the "information revolution" to bring radical social and cultural changes—if they are correct—will find that the direction, consequences, and implications of such a revolution will be largely unpredictable for both society and military organizations.

Such "military revolutions" recast the nature of society and the state as well as of military organizations. By so doing they altered the capacity of states to project military power and allowed the military to kill people and break things ever more effectively. Moreover, these revolutions do not replace but rather overlay each other. Consequently, all the new technology in the world will not help an Iraqi army fight coherently on the modern battlefield because Iraqi society has not gone through the creation of a modern state, and the government lacks the capacity to infuse its citizens with the fervor of the French Revolution. On the other hand, a Vietnamese communist movement, which combined the revolutionary enthusiasm and fervor of the French Revolution in a xenophobic culture, defeated two great Western powers.

"military revolutions" do not replace but rather overlay each other

These four military revolutions raise a number of points. The 17th century revolution laid the basis for the modern state. Until that point, armies and navies were under only the loosest control of central governments. Their employers more often than not failed to pay the troops who in turn looted and pillaged. The result was the catastrophe of the Thirty Years War which devastated Germany and the sack of Antwerp where unpaid Spanish soldiers mutinied, thus undermining Spanish policy in the Netherlands. The action of the Spanish soldiery reflected both their disobedience and the inability of the state to compensate them. The 17th century revolution created military organizations that in Machiavelli's conception not only imposed the laws but responded to them in civil as well as military terms. As the Swedish Articles of War in the early 17th century made clear, soldiers would dig when they were told to dig—a conception that had not always marked the performance of warriors in the Middle Ages. In the macro sense, the European military organizations that emerged in the 17th century were more effective on both the battlefield and in the conduct of civil affairs because they were responsive to the orders of the state bureaucracy. Once the state was able to collect taxes it could pay soldiers on a regular basis; in turn, it demanded that soldiers maintain discipline on the battlefield and in garrison. We take for granted the discipline and responsiveness of Western military institutions and their imitators (such as the Japanese and Indians); but the history of South America and much of the Third World over the past forty years suggests that this political relationship is not always a given.

The French Revolution established the norms for the mobilization of economic, scientific, and popular resources. It interjected ideology and nationalism into the equation of war in the West, and the ferocity of that combination goes a long way toward explaining the 25 years of war that followed (the French Revolutionary and Napoleonic Wars) as well as the thirty-year German war of 1914–45. Faced with foreign invasion brought on by their own ill-considered policies, the political leaders of 1789 declared a *leveé en masse,* which placed citizens and their goods at the disposal of the state for the duration. The result was that the French tripled their army in less than a year and, although they remained less effective in battle than their opponents on a unit to unit basis, they could accept casualties and fight on a scale like no other 18th century military formation. As Clausewitz noted:

Suddenly war again became the business of the people—a people of thirty millions, all of whom considered themselves to be citizens. . . . The people became a participant in war; instead of governments and armies as heretofore, the full weight of the nation was thrown into the balance. The resources and efforts now available for use surpassed all conventional limits; nothing now impeded the vigor with which war could be waged, and consequently the opponents of France faced the utmost peril.[5]

U.S. Army Military History Institute

The American front, November 18, 1918.

It was not until adversaries were willing to fight on the same terms, namely the national mobilization of resources and manpower, that France was finally brought to heel. But its revolutionary example would be replicated by combatants in the American Civil War and later in the fierce killing contests of the two world wars in this century. As suggested above, the French Revolution would find an echo in far off Indochina in the wars waged against the French and later the Americans.

Concurrent with the French Revolution, the first stages of the industrial revolution were already underway in Britain. That upheaval changed the entire economic underpinning of British society and placed unimagined wealth in the hands of political leaders. The industrial revolution did *not* provide the military with technological improvements that helped its soldiers on the battlefield; if anything the British army fought in a retrogressive fashion compared to the French. But while the revolution had little influence on the battlefields of the Napoleonic wars, it provided British governments with enormous financial resources to cobble together and support the military coalitions that eventually defeated Napoleon.

The industrial revolution first influenced the battlefield during the Crimean War, when the rifled musket, telegraph, and steamship combined to allow Britain and France to deploy forces and win against superior Russian numbers. But neither side was willing to seriously mobilize national passions, manpower, and resources. It was left to the opposing sides during the Civil War in the United States, South as well as North, to combine the "benefits" of technology (the railroad, steamboat, rifled musket and artillery, and telegraph) with the French Revolution's mobilization of the populace and national wealth. The result was a terrible killing war of four years which owed its duration to a combination of the three "military revolutions" that had occurred up to that time: the strength of the nation-state, its ability to mobilize society, and the enormous resources and new weapons of the industrial revolution.

In many ways World War I reaffirmed the lethal combination of these revolutions. But in its own way that conflict was a profoundly revolutionary event that fundamentally shattered the Western equilibrium with immense political, economic, and social consequences. The political consequences of the war itself, one could argue, did not end until the autumn of 1989. But of all military revolutions, World War I should be regarded as the most revolutionary in military terms. It involved creating combined arms, exploitation tactics, strategic bombing, unrestricted submarine warfare, carrier operations, and even amphibious war. Admittedly, in some aspects the weapons, technology, and tactical concepts provided only a glimpse into the future, but the glimpse was there nevertheless. Perhaps the best way to illustrate this point is to suggest that a British or German battalion commander from the battlefields of summer 1918 would have understood the underlying concepts of the battlefields of 1940, 1944, and even 1991. A battalion commander of 1914, however, would not have had the slightest clue as to what was occurring in 1918: that was how far military affairs travelled in the course of four years.

RMAs

What then are military professionals to make of these great revolutions that have rocked the history of the West and the world since the 17th century? Probably not much. At best, if they are able to recognize such events, they can hold on and adapt to trying and difficult times. History does

suggest smaller phenomena that might best be termed RMAs. In these cases there is profound evidence that the right military institution and culture can gain a significant advantage.

If military revolutions are compared with earthquakes, we can think of RMAs as pre- and aftershocks. During the process of developing RMAs military organizations must come to grips with fundamental changes in the political, social, and military landscape; they innovate and adapt to—in some cases foreshadow—revolutionary changes. RMAs involve putting together the complex pieces of tactical, societal, political, organizational, or even technological changes in new conceptual approaches to war. The formula is rarely apparent at the time, and even historians with access to the documentary evidence find it hard to reconstruct the full concept. The results on the battlefield, however, make it chillingly clear which military organization has done better at innovating and adapting. Before proceeding we might want to look at where possible RMAs fit with the larger phenomena of military revolutions (see figure 2).

RMAs take considerable time to develop even in wartime

There are several historically interesting aspects of RMAs. First, most take considerable time to develop even in wartime; and peacetime RMAs even in the 20th century have taken decades. One can argue over the accuracy of applying the term *revolutionary* to concepts and capabilities that take such a long time to emerge. There is also the matter of perspective. To the French and British what happened on the Meuse in summer 1940 and afterwards undoubtedly appeared revolutionary. To the Germans the doctrine and capabilities that destroyed the Allies in the battle of France would have appeared revolutionary. Moreover, what is clear today was not apparent to those who fought then. For example, many German officers in May 1940 would have attributed their success to the fanaticism that Nazi ideology had infused into the fighting spirits of their troops. And there would have been some legitimacy to that view, given German perseverance in crossing the Meuse despite casualty figures in lead companies that reached upwards of 70 percent.

Originating an RMA in wartime is difficult enough. The combined arms revolution during World War I, which saw development of accurate indirect artillery fire with decentralized infantry tactics that relied on fire, maneuver, and exploitation, emerged from the slaughter on the Western Front in 1917 after three long years of learning. And the details of that revolution were not entirely clear when the war was over, as the fate of the British and French in the interwar years underscores. In fairness to the World War I institutions that grappled with systemic and intractable problems in an atmosphere of fear, confusion, and ambiguity, it was not until the 1980s that historians began to unravel what actually took place on the battlefield between 1914 and 1918.

If the problems of adapting to wartime conditions are difficult, those involved in peacetime innovation are a nightmare. Michael Howard has compared the military in peacetime to a surgeon preparing for a series of operations at an unknown time and place under unidentified conditions without the benefit of having previously worked on live patients.[6] Rather, he must rely entirely on what he has read and on incomplete and inaccurate models. Similarly, military organizations are called on to function in the most trying circumstances, which simply cannot be replicated in peace. And they frequently have limited resources to prepare and train. Yet the record, as demonstrated by the German campaign against Western Europe in 1940, suggests that some militaries have done better than others. The results of that were equivalent to what most would agree represents an RMA.

Here history contributes to thinking about what kinds of military institutions and cultures the

Figure 2. Military Revolutions and RMAs

Preshock RMAs: *longbow, Edward III's strategy, gunpowder, fortress architecture*

Military Revolution: *17th century creation of the modern state*

Direct- and Aftershocks: *Dutch and Swedish tactical reforms, French tactical and organizational reforms, naval revolution, Britain's financial revolution*

Preshock RMAs: *French military reforms (post Seven Years' War)*

Military Revolutions: *French and industrial revolutions*

Direct- and Aftershocks: *national economic and political mobilization, Napoleonic way of war, financial and economic power based on industrialized power, technological revolution of war (railroads, rifles, and steamboats)*

Preshock RMAs: *Fisher Revolution (1905–14)*

Military Revolution: *World War I*

Direct- and Aftershocks: *combined arms,* Blitzkrieg, *strategic bombing, carrier warfare, unrestricted submarine warfare, amphibious warfare, intelligence, information warfare (1940–45), stealth*

U.S. Navy

Omaha Beach, June 6, 1944.

United States needs to prepare for the next RMA. Historians tend to argue that military organizations are focused on the last war and thus have substantial problems with the next conflict; for example, the traditional image of a revolutionary German army jumping into the future with its *Blitzkrieg* tactics while the British and French, still locked in World War I, failed miserably.

Nothing is farther from the truth. Almost immediately after World War I, the *Reichsheer*, under its first chief of staff and second commander, General Hans von Seeckt, organized no fewer than 57 committees to study what really happened on the battlefield of 1918 in excruciating detail. He charged those examiners to produce:

short, concise studies on the newly gained experiences of the war and consider the following points: What situations arose in the war that had not been considered before? How effective were our prewar views in dealing with the above situations? What new guidelines have been developed from the use of new weaponry in the war? Which new problems put forward by the war have not yet found a solution?[7]

The crucial point is, as Seeckt's last question emphasizes, that the Germans used a thorough review of recent military events as a point of departure for thinking about future war.

Moreover, the spirit of this examination depended on an attitude that Ludendorff expressed in his memoirs about visits to the front: "[Staffs] knew I wanted to hear their real views and have a clear idea of the true situation, not a favorable report made to order."[8] The result was that German doctrine, first crystallized in 1923 and then reworked by Generals Werner von Fritsch and Ludwig Beck in 1932 shortly before they took over direction of the army as commander in chief and chief of staff respectively, reflected actual conditions on the battlefield of 1918. Germany then built on that experience in a coherent, careful, and evolutionary fashion. There was nothing revolutionary about German armored tactics; they fit within a larger conceptual framework of combined arms that rested on exploitation, decentralized decisionmaking, and fire and maneuver—that is, the battlefield of 1918. This process of rigorously examining the past carried over into the German evaluation of current exercises and training.

The French army took no such approach. The examination of the recent past was used to justify current doctrinal trends. In other words, they knew the answer before they started looking. The British case was even more depressing. It was not until 1932 that the chief of the Imperial General Staff, Field Marshal Lord George Francis Milne, saw fit to establish a committee to study lessons of the previous war. Admittedly the committee was given wide latitude: it would examine World War I and determine if its lessons were being adequately addressed in manuals and training. Unfortunately its report was submitted to the next chief, Field Marshal Archibald Montgomery-Massingberd, and the whole effort was deep-sixed since its critical review of army performance in 1914–18 might have made that service look bad. If the British did not get the revolution in armored and mechanized warfare right, critics like J.F.C. Fuller and Basil Liddell Hart were further off the mark. In fact, much of British failure on the battlefields of 1941–42 in North Africa was due to slavish reading of Fuller's argument that armor operated best on its own. Yet there is another point regarding RMA in land warfare during the early 1940s. Starkly put, recent research has stressed that the French army did a miserable job in training its soldiers to face the great test in 1940. Had its units on the Meuse followed doctrine there is a good chance that the German infantry crossings on May 13 would have failed.

If various military organizations misused or misinterpreted history in the interwar period, others completely rejected its relevance to the problems of the day. The Royal Air Force repudiated history entirely and its leaders argued that technology had rendered the past irrelevant.

DOD

Airborne ambulance, Vietnam.

Rather than study air operations in World War I, one could leap into the future to base doctrine, force structure, and employment concepts entirely on theoretical conceptions of what war should look like. Such an approach had a crucial and detrimental impact on the British strategic bombing campaign during much of World War II. One can argue that the lessons of World War I were not entirely clear with respect to strategic bombing and its effects on an enemy nation. Two things were clear, however, from the aerial combat of 1914–18.

First, such air operations required air superiority. Absent that, bombers and reconnaissance aircraft suffered unacceptable losses. Second, finding and hitting targets under anything other than perfect daylight conditions posed intractable challenges. As one naval officer noted of escapades during World War I night operations,

. . . experience has shown that it is quite easy for five squadrons to set out to bomb a particular target and for only one of those five ever to reach the objectives; while the other four, in the honest belief that they have done so, have bombed four different villages which bore little if any resemblance to the one they desired to attack.[9]

Such lessons disappeared from the organizational memory of the Royal Air Force.

The result of the unwillingness to learn from the past was that the British went into the war with almost a religious belief in the survivability of bombers and that finding and destroying targets, if a problem at all, would not be difficult to solve. Such belief in the irrelevance of the past became unwillingness to learn from the present. There were plenty of warnings in terms of exercises that suggested that the Royal Air Force was going to have a hard if not impossible time identifying and hitting targets at night or in bad weather. In turn, the confidence that bombers would always get through led British senior officers to go so far as to suggest that long-range escort fighters were technologically infeasible. They made this argument early in World War II with no technological or scientific evidence to support it. What occurred was a process by which their mental jump into the future without reference to the past caused them to minimize technological possibilities because those possibilities did not fit into their preconceived notion of the future.

American airmen did not fare much better. At least Billy Mitchell, despite the stridency of his arguments, recognized the underlying lesson of the air war in World War I: air superiority was required before airpower could be effectively employed. But by the early 1930s, airmen at the Air Corps Tactical School had discarded such realism and blithely argued that great formations of self defending bombers could fly deep into an enemy nation without the protection of long-range escort fighters and only sustain acceptable casualties. The proclivity to disregard the past as well as the present—that is, a general disregard for an evidentiary-based approach to the preparation of military forces—carried over to the war in the case of both forces. And they continued to execute their operational and tactical frameworks well into 1943 despite unequivocal evidence of problems in their assumptions and thus the results. In the end, the combined bomber offensive played a crucial role in World War II, and we should consider its achievements when arguing that strategic bombing was

an RMA. The cost in aircraft and crews, however, suggests an unacceptable price that was largely the result of too many airmen accepting assumptions that past as well as present evidence suggested were substantially flawed.

The point is not to belittle the airmen of the interwar period. In fact this century is replete with military organizations that preferred to impose their peculiar models of war on conditions they confronted rather than learn from the past. To some extent all organizations will get certain things wrong about the next war; it has been the persistence of many military organizations to hold their course *despite* evidence to the contrary that is inexcusable. The two most obvious cases are the British army during World War I and the American military in Vietnam.

all organizations will get certain things wrong about the next war

How should we adjust to the next RMA? First, no revolution has ever involved a leap into the future without a lifeline to past military concepts and capabilities—particularly the recent past. We should not think that back to the future suggests anything other than a stab in the dark. Those military organizations that have created successful RMAs have tied development of the revolutions to a realistic understanding of the past. That attention to lessons learned has generally been carried over into an evidentiary-based analysis of current exercises and capabilities in peacetime as well as in war. This is not to say that organizations that have failed to use such an approach have failed to adapt to the conditions of a new RMA. The British army during World War I and the combined bomber offensive suggest that, given enough blood and treasure, even the most obdurate military organization will eventually learn, but that hardly suggests a path we should wish to retrace.

Secondly, we must not believe that new concepts or capabilities will negate the fundamental nature of war. Friction together with fog, ambiguity, chance, and uncertainty will dominate future battlefields as it has in the past. History certainly stresses that lesson, and for those who debunk history it is worth noting that various sciences—evolutionary biology, quantum physics, and most current mathematical research—emphasize that Clausewitz's basic understanding of how the world works was correct. Friction will not disappear in the next century; it is a fact of life.

Finally, although technology is important it is only a tool. If we connect it to a clear understanding of the past and present, we can perhaps push our current capabilities into the future in an intelligent fashion and thus be on the leading edge of the next RMA. If we jettison history by haphazardly leaping into an uncertain future, we may endure the same consequences as the airmen of World War II. In 1942 America had almost unlimited resources and the will to "pay almost any price and to bear any burden." Those conditions may well not obtain in the future. **JFQ**

NOTES

[1] The author acknowledges the participation of Cliff Rogers, Geoffrey Parker, John Lynn, Macgregor Knox, Dennis Schowalter, Holger Herwig, Jonathan Bailey, and Allan R. Millett at the RMA conference which was held at Quantico, Virginia, in April 1996.

[2] See among others the introduction by William A. Owens to *Dominant Battlespace Knowledge: The Winning Edge,* edited by Stuart E. Johnson and Martin C. Libicki (Washington: National Defense University Press, 1995), pp. 3–17.

[3] For the development of German armor doctrine, see Williamson Murray, "Innovation in Armored War, " in *Military Innovation in the Interwar Period,* edited by Williamson Murray and Allan R. Millett (Cambridge: Cambridge University Press, 1996).

[4] The following line of argument owes much to the historians who met at Quantico in April 1996, in particular Clifford Rogers and Holger Herwig.

[5] Carl von Clausewitz, *On War,* edited and translated by Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1976), p. 592.

[6] Michael Howard, "The Use and Abuse of Military History," *Journal of the Royal United Service Institution,* vol. 107, no. 625 (February 1962) pp. 4–10.

[7] James S. Corum, *The Roots of Blitzkrieg: Hans von Seeckt and German Military Reform* (Lawrence, Kans.: University Press of Kansas, 1992), p. 37.

[8] Erich von Ludendorff, *Ludendorff's Own Story, August 1914–November 1918,* vol. 1 (New York: Harper and Brothers, 1919), p. 24.

[9] Quoted by Group Captain R.A. Mason in "The British Dimension," *Airpower and Warfare,* edited by Alfred F. Hurley and Robert C. Erhard (Washington: Government Printing Office, 1979), p. 32.

Military Innovation and Carrier Aviation—

The Relevant History

By JAN M. VAN TOL

U.S. Navy

USS Lexington.

Major differences between the United States and Great Britain in both the development and employment of aircraft carriers and carrier aviation in the interwar years suggest how innovation was highly successful in the American case and much less so in the British. The only country with carriers at the end of World War I was Britain. It had used carrier-based aircraft to carry out the sort of missions that characterized mature operations during World War II. Royal Navy leaders supported aviation in the fleet. Yet by 1939 Britain was outclassed by America and Japan because of its obsolete carrier aircraft. How was such a reversal possible?

Commander Jan M. van Tol, USN, is commanding officer of *USS O'Brien* and formerly served in the Office of Net Assessment within the Office of the Secretary of Defense.

The early 1920s found the United States with huge capital ship construction underway and approaching Britain in Mahanian splendor. A decade later, the battleship remained dominant while the battle force was far smaller than anticipated. Two carriers entered service and promised to alter naval warfare, and six months after America entered World War II carriers decisively changed the nature of the Pacific War. The most important development leading to this capability took place in an era of disarmament and severe budgetary constraints.

Revolutions in military affairs are driven by the interplay of technological, operational, and organizational factors. This article describes the historical evolution of British and American carrier aviation, with emphasis on those factors. An article in the next issue of *JFQ* will analyze how this revolution succeeded in America, why it was less successful in Britain, and the subject of military innovation in general.

Early Developments

Improvements in battleship gunnery allowing accurate shooting beyond the horizon spurred naval aviation. The period 1900–14 was one of intellectual ferment. Leaders such as Mahan and Luce fostered intellectual curiosity and experimentation. It was the era when steam turbines, long-range guns, fire control calculators, submarines, radios, and oil-fired engines were introduced.

Aviation gradually acquired *bureaucratic* standing within the Navy. In 1908 the Bureau of Equipment authorized purchase of aircraft for experimental use (largely for spotting). In 1910 the Secretary of the Navy designated an advisor for aviation matters. At the same time the influential General Board—composed of active and retired flag officers—advised the Secretary that space for aircraft should be provided in future scout ships. The Chief of the Bureau of Steam Engineering also told the Secretary that aircraft would play a major role in naval operations and recommended that some Navy officers be taught to fly.

by 1916 both the U.S. Army and Navy were aware of the growing usefulness of aircraft

Noteworthy *technological* events occurred. Eugene Ely made the first takeoff from and landing on a ship in 1910–11. Glenn Curtiss demonstrated the first successful seaplane. However, aircraft were generally poor in quality and often crashed or were inoperable. *Organizationally*, in 1913, on recommendation of the General Board, the Navy established an organized air service. It noted that "an air fleet . . . had become a necessary adjunct to the Navy." By 1914 there was a Director of Naval Aviation who routinely testified before Congress.

Key individuals like Henry Mustin and John Towers, both of whom served as battleship spotters and were aware of the fire control problems of long-range gunnery, learned to fly. By 1914 they were commanding officer and executive officer respectively of the Pensacola Aviation Training Center, established to help organize an air service. There they met Captain W.S. Sims when his squadron stopped en route to Mexico and induced him to take along three seaplanes on a cruiser. Sims had already made a name as an innovator and reformer after successfully opposing the vaunted Mahan over a question of gunnery and ship design.

External Environment

Meantime in the industrial sector, aircraft development was crippled by prolonged litigation over patent rights held by Orville and Wilbur Wright and by Glenn Curtiss. The suit involved the issue of whether the development of Curtiss ailerons infringed on Wright wingwarping technology for turning aircraft. In consequence, as America's entry into World War I approached, Army and Navy air requirements could not be met by the civilian sector.

By 1914 European aircraft performance, more advanced than in America, led to expanded military operations. The war offered great incentive for improving performance and opportunity to see what worked and what didn't. By 1916 both the U.S. Army and Navy were aware of the growing usefulness of aircraft and their own lack of air readiness. In response Congress approved increased funding for aircraft and expansion of training operations at Pensacola. It also permitted the Navy to establish a separate Naval Flying Corps. The Secretary of the Navy further suggested building a naval aircraft factory to develop prototypes and provide test data on costs and schedules to industry.

Air *operations* in 1917–18 foreshadowed key uses of airpower in World War II. Aircraft were increasingly employed to provide close air support, defend against zeppelin bombing raids, bomb military targets such as sub pens and air bases, and prevent an enemy from doing the same.

At sea, the Royal Navy converted several ships to carry airplanes and towards the end of the war constructed "built-for-purpose" carriers. Their operational roles were scouting and reconnaissance and attacking land targets. There was no thought of using aircraft against the German fleet at sea, largely because the ordnance was not considered powerful enough. The British also conducted shore-based operations, including zeppelin defense and coastal antisubmarine warfare patrol.

The war revealed the relevance of aircraft to accomplishing military tasks. This influenced many key individuals, not all naval. Leaders such as Douhet, Trenchard (Royal Flying Corps, later head of the Royal Air Force), and Mitchell (head of aviation for the American Expeditionary Force) were convinced that mass destruction of targets by bombing would render static land warfare unnecessary. In Britain the Royal Air Force was formed as a separate service in April 1918. In the United States Mitchell's advocacy of strategic bombing and a separate air force stimulated developments in the Navy as well as the Army. Naval officers such as Sims and Mustin returned from Europe also convinced of the effectiveness of aircraft but with a different focus.

British and American officers worked closely together in 1917–18. Their collaboration was evidenced by the fact that a Royal Navy constructor provided the latest British carrier designs to the United States in late 1917. Yet almost immediately

after the war British and American carrier development diverged. Indeed there was considerable Anglo-American rivalry during the interwar period so that particularly in the 1920s there was little occasion to share successes and failures.

Comparative Experiences

The Royal Navy had the only carriers in 1919 and were far ahead in carrier aviation. Senior officers wanted a dozen to support a large battle fleet. Based on their wartime experience, they had definite ideas on missions: scouting, spotting, fighting, and torpedo attack as well as air group composition. *Institutional acceptance* of carriers as an integral part of the battle fleet was much greater among senior British officers than their American counterparts. This was likely due to the Royal Navy having very recent experience with combat at sea and with actual use of carriers.

But political and budgetary constraints soon made it clear that there would be no large postwar battle fleet. In early 1919 the cabinet adopted a "10-year rule" that envisioned no major war for a decade and was the basis for drastic cuts in defense. In particular, construction of most large ships was canceled, including battlecruisers equal in size to *USS Lexington*. Nonetheless, in July 1920 the Admiralty Staff Conference released a report calling for at least five carriers, three for the home fleet and two for overseas commitments and refitting. This helped drive later negotiations on carrier limits in the Washington Naval Treaty of 1922.

Organizationally the Royal Naval Air Service was subsumed under the Royal Air Force in 1918. The navy was effectively deprived of 60,000 aviation experts. This would have severe repercussions for British naval aviation.

In America aviation issues exploded into public and congressional consciousness in 1919. Mitchell told the Navy General Board that a unified air service was inevitable and informed Congress that air forces would supersede navies as the first line of defense. A former commander of naval forces in the Pacific, Admiral William Fullam, published an article suggesting that aircraft would become independent strike weapons beyond their use as gunnery spotters and scouts. Sims, now president of the Naval War College, further incited the debate by charging that the Navy—including its air component—was unready in 1917. Many wrote about military aviation, but it appeared to be the public testimony of senior champions that forced the issue to the forefront.

In late 1920 the Navy conducted confidential bombing tests against an obsolete battleship well before the more famous 1921 Mitchell tests. *The New York Times* obtained damage photos and called for "a free and thorough discussion as to the effect of new weapons upon naval warfare." In subsequent congressional testimony Mitchell again argued for a unified air service, claimed aircraft could sink ships, and charged that the Navy did not devote sufficient attention or resources to its air units. In response the General Board argued that the Nation could not afford to abandon battleship-based forces in response to "mere theories as to the future development of new and untried weapons." That was partially undercut by senators such as William Borah (a champion of new naval technology including aircraft) and officers such as Fiske, Fullam, and Sims. When Sims testified in 1921 that he "would not abandon battleships altogether," he was certainly less than confident about their future role. The issue was particularly salient because construction of battleships authorized on the eve of the war continued.

Organizationally, the Bureau of Aeronautics was formally authorized by Congress in July 1921. Its first chief, Rear Admiral William Moffett, a key individual, immediately formed a staff of experts including future flag officers such as Bellinger, Radford, and Land. Soon after, Admiral Sims wrote Moffett to stress the importance of close organizational cooperation with the Naval War College, which was crucial in developing naval aviation, as was the bureau's involvement with both academe and industry.

External Environment

After the war the prospect of an expensive naval arms race between the U.S. and British navies dismayed both nations and provided the impetus for an arms control conference. In 1921 President Harding was elected on a platform which contained a popular naval disarmament plank. When the Washington Naval Conference of 1922 was announced, it became clear that battleships authorized in 1916 and still under construction would not be completed. Although the conference focused on battleships, it placed quantitative and qualitative restrictions on carrier tonnage. Among other provisions, America, Britain, and Japan were each allowed to convert two battlecruisers into carriers. This would have differing effects on carrier forces, particularly by limiting experimentation with carrier forces, which directly affected carrier design.

The restrictions were not at first perceived as significant obstacles since for the signatories it was a question of building up to the limit. The British understood that their carrier designs were unsatisfactory. Both treaties permitted scrapping them and building other carriers to the negotiated limit, but political and economic realities

would later preclude it. The treaties also created expectations about progress in disarmament and naval arms control. That contributed to a climate in which it became difficult to convince America and Britain to buy "unnecessary" items such as additional carriers or, in the Royal Navy, scrapping extant carriers for newer ones which incorporated lessons learned.

The British had four carriers in 1922, but because of the 1919 halt in capital ship building they had no large battlecruiser hulls to convert. Instead they used cruisers, *HMS Courageous* and *HMS Glorious*, which had small aircraft capacity and limited space to accommodate larger aircraft.

In the United States, treaty restrictions—coupled with tight budgets and the availability of large battlecruiser hulls that would otherwise have been scrapped—led to selecting *USS Lexington* and *USS Saratoga* for conversion. Being the furthest along in construction, they would entail the least cost. The availability of these hulls would be fortuitous for diverse unanticipated reasons. They could accommodate many larger and heavier aircraft, support more ordnance and aviation fuel storage, and operate in bad weather. That contrasted with the limits the Royal Navy would find in smaller carriers. But the conversions were slow and expensive, with neither ship becoming available until 1927. How could carrier aviation concepts be tested in the interim? The answer was found in part at the Naval War College.

in simulations the Naval War College examined various operational and technical problems

Naval War College

In 1919 Admiral Sims initiated a process whereby the potential of naval aviation could be established systematically through tactical and strategic *simulations*. He sought to address how aviation should be based, supported, and might be used given the anticipated developments in aeronautics. Sims guided a rigorous refining of two kinds of games. The first, strategic in nature, were called "chart maneuvers" and explored the issues of a war with Japan. The second, tactical, were "board maneuvers." They were conducted on a large tabletop and compared the military value of different tactical formations, offensive and defensive concepts, and force mixes.

Sims noted the importance of connecting wargaming rules with actual data and conditions: "Air tactics are of utmost concern to the college, and only from actual work done in the field can we hope to formulate definite and sound ideas concerning them." Furthermore he noted: "In operating aircraft in chart maneuvers and game board exercises, various rules are applied which must of necessity be in close agreement with actual conditions if the true value of aircraft to the fleet is to be appreciated." And writing in 1922, Sims stated: "If the rules of the game are not right . . . the conclusions drawn from the maneuvers are sure to be erroneous."

To square simulations with experience, the faculty regularly corresponded with aviators in the fleet to stay abreast of lessons learned from actual operations. Game results were often verified by experience from fleet problems. With the establishment of the Bureau of Aeronautics a similar exchange developed. The bureau supplied projections on the technical performance characteristics of future systems and the college helped evaluate ship and aircraft designs.

The Naval War College played other roles in fostering aviation. It contributed to scenarios used in fleet problems and supplied ideas to be tested in the fleet. One example is the circular fleet formation devised by Commander Chester Nimitz and successfully introduced to the fleet in 1923. This symbiotic relationship gave Newport substantial credibility in testing concepts through simulation absent real opportunities to do so. The college was also the forum through which officers were exposed to and forced to consider the implications of airpower. Seminal papers by Moffett, Mustin, and others were regularly presented. Since attendance at Newport marked mid-level professional success, students returning to the fleet in senior ship and staff positions had a growing appreciation of aviation. That influence was bolstered in 1925 when Admiral Coontz advocated to the Chief of Naval Operations that "all students at the U.S. Naval Academy be given a course in aeronautics" and that although "all graduates may not be able to qualify as . . . naval aviators, the great majority can . . . become familiar with . . . the offensive and defensive employment of aircraft."

In simulations the Naval War College examined various operational and technical problems and questions. Most interesting were simulated carrier operational concepts. Between 1920 and 1925, a number of tentative conclusions based on these were reached:

- The Lanchester model of battleship effectiveness did not apply to carriers. The former delivered ordnance in steady streams while carriers delivered "pulses" of power.
- Carriers, once in range of an enemy, were to strike immediately. It was also essential that the first targets be enemy carriers in order to gain air superiority over an enemy fleet.
- The key measure of effectiveness (MOE) for carrier strike was numbers of aircraft in the air, presumably because the amount of ordnance available was a direct function of that. Naval War College studies in the early 1920s suggested that strike potential was maximized when aircraft were launched quickly from a number of smaller carriers.

U.S. Navy

USS Saratoga.

U.S. Navy

■ Carriers had many weaknesses. They had to be close to enemy formations to launch and recover planes due to the short range of bombing aircraft. Moreover, wind direction dictated the general flight operations course.

Practical Experience

In 1924 the Navy established a Special Policy Board of the General Board. It was directed to consider the status of aircraft and the future of the battleship. The board consulted aeronautical authorities including the National Advisory Committee on Aeronautics which indicated that aircraft "maximum performance . . . may be increased about 30 percent by future developments." That modest projected growth and the lack of practical experience and verification of ideas suggested in the Naval War College simulation caused the board to recognize the battleship as the prime means of delivering ship-killing ordnance. But the board did not so much reaffirm battleship dominance as it recognized the uncertainty of aircraft as strike weapons. This was supported by recommendations from the Chief of Naval Operations for steady funding of aircraft programs, conversion of both *USS Lexington* and *USS Saratoga*, as well as authorization for a built-for-purpose carrier.

These events pressured the Navy to demonstrate the practicality of the ideas pushed by naval aviators and supported by simulations. Proponents knew they had to show results both to fend off demands for an independent air service and to influence Navy resource allocation issues.

A key individual, Captain J. M. Reeves, now entered the story. He arrived at Newport in spring 1924 and for the next year headed the tactics department with responsibility for simulations. He then took a "catch-up" observer course for non-aviators at Pensacola. The Chief of Naval Operations appointed Reeves commander of Aircraft Squadrons, Battle Force, in September 1925 which gave him an organizational role. A month later he was directed by the commander in chief, Battle Fleet, to develop "strategy and tactics of the air in its relation to the fleet." Thus the theoretician/wargamer was given resources and official encouragement to experiment and test ideas freely in the field.

Reeves started with the simulation conclusion that the number of aircraft in the air was the key MOE for strike effectiveness. His problem was how to maximize that number. For him, the technical problem of the carrier air strike concept was how to reduce the long per-plane launch/land times. He examined the launch/land process in detail. Before, each plane was put below after landing in case the next one missed the arresting wires and crashed into those on deck. Reeves invented a movable deck carrier, which obviated the need to move to and from the hangar deck. Once all planes were recovered, they were moved aft, refueled, rearmed, and ready to launch.

U.S. Navy

DT–2 from *USS Langley* with torpedo and rigged parachute, 1926.

By August 1926 Reeves recommended that the official status of *USS Langley* be changed from experimental to "full-fledged combatant" and that its complement of aircraft be doubled to 28. A year later his successor reported, "Commander Aircraft Squadrons believes that he can operate in time of war 48 planes from the carrier."

From mid-August 1926 aviators on board *USS Langley* were "devoted to intensive study by practical operations of aircraft tactics." One *innovative tactic* examined was dive-bombing, which seemed to address the problem of accurately hitting targets (though it was unclear that this was a purely Navy development). In October 1926 Reeves had a squadron of aircraft carry out such an attack on an alerted battleship squadron. It was witnessed by the fleet commander in chief, Admiral Hughes, who promptly became a strong proponent of naval aviation. By December the accuracy of steep dive-bombing, later used throughout World War II, was established (though it was not clear that the method would kill ships given the weak ordnance of the period). Contemporary reports also noted more combined dive-bombing and torpedo *tactics* against ships armed with antiaircraft guns.

These developments had an organizational consequence. Reeves' old job as commander, Aircraft Squadrons, Battle Force, became a flag billet in September 1927.

American Developments

Admiral Moffett, reappointed chief of the Bureau of Aeronautics in March 1925, was the Navy's point man in the political battle against General Mitchell and his congressional supporters. He approved publicity including risky nonstop seaplane flights between California and Hawaii as well as visits by the airship *Shenandoah* across the country in September 1925. Both events ended with fatal accidents and were cited as evidence of Mitchell's charges of naval negligence and incompetence (which soon culminated in his court-martial).

In response, President Calvin Coolidge created the Morrow Board to examine the future of aviation and government involvement. After lengthy hearings the board rejected the idea of a unified air service and unified aircraft procurement. It called on Congress to authorize procurement of 1,000 planes over five years to sustain the aircraft industry and provide the Army and Navy with modern planes. It also recommended that aircraft carriers and naval air stations be commanded by naval aviators. The motivation for the last item is unclear. Did the board conclude that such assignments required knowledge possessed only by aviators, or that viable command and career opportunities should be provided for aviators? Giving ship command to aviators would bestow greater institutional acceptance by the then-dominant, more traditional surface warfare community.

In mid-1926, the Battle Fleet commander in chief noted that there was "a lack of statistical tactical data in connection with aerial operations and . . . of any system or well-defined doctrine for the employment of aircraft in major operations." At the same time, the Bureaus of Aeronautics and of Construction and Repair differed on the design of the built-for-purpose carrier recommended by the 1924 Special Policy Board. The General Board asked the Naval War College for assistance.

Simulation in 1926–27 specifically addressed issues dividing the Bureaus of Aeronautics and of Construction and Repair. The staff of the Naval War College determined that it was essential that carriers be able to arm and service planes on deck rather than exclusively in the hangar and that

they have open ventilated hangar decks for servicing which precluded interference with flight deck operations. It later specifically recommended construction of "large high-speed vessels, probably of 23,000 tons and 33 knots."

In June 1926 Secretary of the Navy Curtis Wilbur postponed further construction pending exercises scheduled to take place after the commissioning of *USS Lexington* and *USS Saratoga* in 1927. Moffett unsuccessfully objected, arguing that a delay would put the Navy at a disadvantage vis-à-vis Britain and Japan. The Secretary agreed to revisit his decision after the December 1926 dive bombing demonstration and rigorous analysis by the Naval War College as noted above. He established a special review board to weigh new evidence. The instructions to the board stated that it was "necessary to assume certain risks in the purchase of new equipment and be willing to assume these risks if we expect to advance."

loss of aviation personnel separated the Royal Navy from wartime lessons

Moffett persuaded Rear Admiral David Taylor to include Moffett, Reeves, and Captain H.E. Yarnell (the future first commanding officer of *USS Saratoga*) as board members. The review quickly found that the key issue was what kinds of aircraft to put on carriers. Congress had acted on the recommendation of the Morrow Board and authorized procurement of 1,000 planes over five years. But what kind?

The board suggested that acceptance of carrier aviation as a primary strike weapon was far from universal. It rejected the concept of a single scout/fighter/bomber and identified six priorities:

- fighter planes
- battleship/cruiser spotters
- scout/reconnaissance planes
- dive bombers
- level bombers
- torpedo planes and patrol seaplanes

The priority given to fighters and spotters suggests that carrier aircraft were primarily seen by the board as the means of achieving air superiority for spotting during engagements between battleship forces. The board had the luxury of considering multiple specialized aircraft because of the large congressional authorization. Otherwise it might have been forced to decide which types to recommend and hence made a skewed selection not necessarily based on operational tactical requirements.

British Developments

Organizationally, establishment of an independent Royal Air Force had pernicious effects, both direct and indirect. Those were aggravated by financial problems. The service had to justify its existence under severe budgetary constraints, relying heavily upon strategic bombing doctrine, which it argued supplanted many roles formerly carried out by armies and navies and at lower cost. This came to be called "air substitution." The Royal Air Force consistently convinced Whitehall of the merits of its case, which further constrained other service budgets. In particular, the Royal Navy was unable to replace outmoded aircraft carriers until the late 1930s. The Royal Air Force, largely responsible for procuring naval aircraft, bought as few as possible in order to buy more aircraft for its principal strategic bombing mission. This further militated against acquiring more or larger carriers to accommodate more aircraft.

There were other organizational consequences. Loss of technically-minded aviation personnel effectively separated the Royal Navy from its corporate memory of wartime lessons. All naval links with the aviation industry were cut. There was no mechanism for institutionalizing aviation in the service. There was no way to establish bureaucratic equivalent of the Bureau of Aeronautics. All this made it impossible to conduct any significant study of the future role of naval aviation.

The loss of naval aviators who believed in carrier potential eliminated the counterweight to the gunnery community. Coupled with dramatic increases in the effectiveness of surface gunnery (with spotting aircraft) in the 1920s, that materially affected conceptions of how aircraft should be used. While the navy did reestablish a Fleet Air Arm with junior officers in 1921, it strongly resisted separateness. Aviators served alternate tours between Fleet Air Arm and the rest of the Royal Navy. Nonaviators commanded carriers because good seamanship was the key aspect of command. The practical effect was that no "band of committed enthusiasts" could form an internal lobby.

But Royal Navy carrier development was not hindered by organizational problems alone. The technical aspects of British carrier design were deficient in ways that had a cascading effect. Carriers were by nature expensive, durable ships; thus design decisions had long-lasting consequences. Moreover, those decisions also dictated key aspects of carrier aircraft design. Consequently, development of carrier aircraft in the 1930s was heavily shaped by carrier design decisions made long before much operating experience had been acquired. Since aircraft were then relatively short-lived, particularly during a period of rapid technological change, there was a premium in having large carriers with large margins for accommodating newer aircraft and their support requirements. Both America and Japan had large hulls which could be converted into carriers while Britain did

not. The other way to accommodate unforeseen changes in requirements was with a budget that allowed for replacements, a luxury Britain lacked. Even when the coming war resulted in much greater defense spending, urgent competing priorities permitted only one additional carrier to enter the fleet prior to 1940, while urgent Royal Air Force defensive requirements limited production resources available for improved naval aircraft.

One key early technical judgment bedeviled British carrier development. The Royal Navy did not adopt carrier deck parks; when not engaged in flight operations, aircraft were stowed below. Thus hangar size became a determinant of carrier aircraft capacity and characteristics and drove operational cycle times. The hangars were closed rather than open, so aircraft engines had to be warmed up on deck. But hangar size was impossible to alter after the fact. Another major problem was limited aviation fuel storage and inability to retroactively install special fuel tanks. Even had aircraft capacity been increased, it would not have been possible to support the larger airwing. This problem only got worse as more powerful engines were developed. Flight deck gear was sadly deficient. The Royal Navy did not install an effective deck barrier until 1939. This affected flight operations because aircraft required more deck space for launch and landing, which drove an apparent requirement that aircraft be below between landings and brought up sequentially for launch. Since this procedure was key, carriers could not expeditiously launch large strikes. Moreover, since the British could not see how to overcome this problem they presumed other navies had a similar one. Admiralty documents dismissed claims about American aircraft capacities into the 1930s. Flight deck limits also imposed key technical features on aircraft design including slow launch and landing speeds. These technical requirements conflicted with desirable tactical characteristics. That was not crucial in the biplane era, but the Royal Navy was unable to modify ships to accommodate the powerful monoplanes of the mid-1930s.

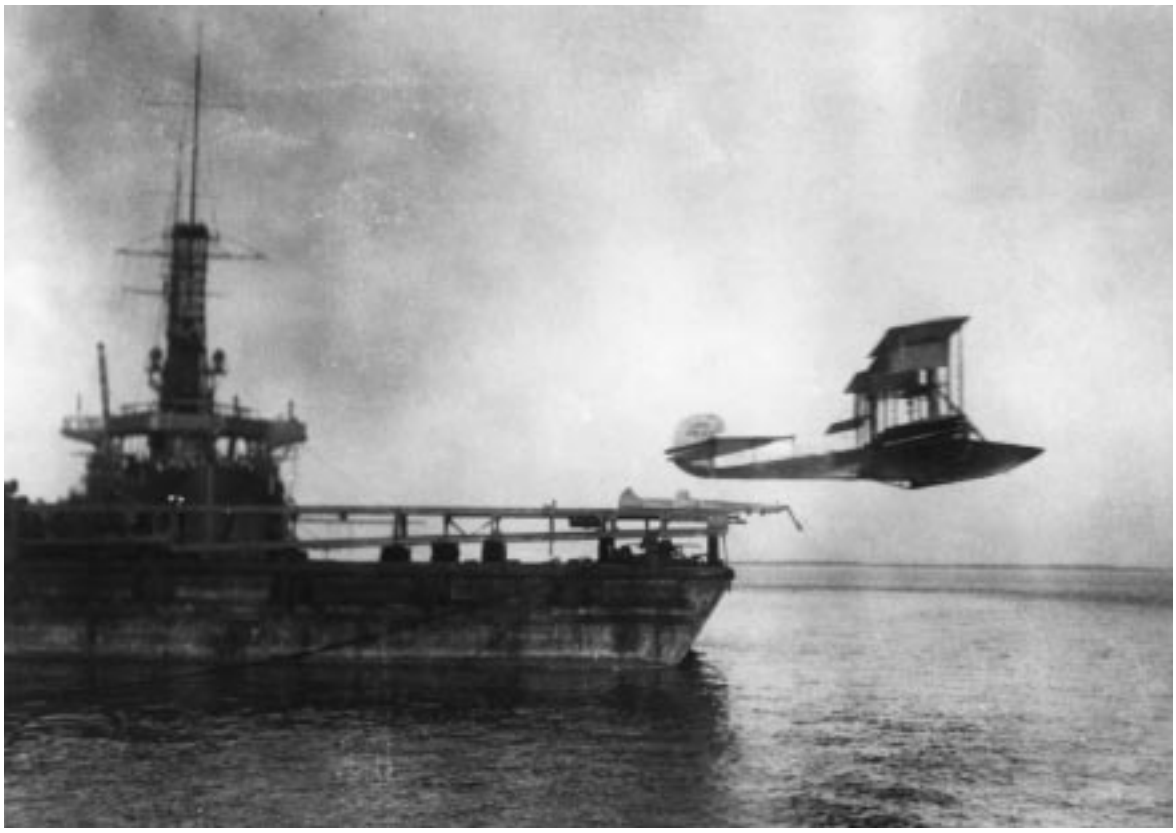
Unlike America and Japan, Britain did not confront a major naval enemy in home waters. By the 1930s the threat seemed to be a small Italian fleet and a handful of powerful German surface ships. In dealing with it, Royal Navy thinking was heavily influenced by World War I. The operational problem bedeviling the British then was reconnaissance. Since the Royal Air Force controlled all landbased aircraft and stressed strategic bombing, the Royal Navy did not have long-range, land-based patrol planes for maritime reconnaissance. Carriers required their own search aircraft which meant extra crew for navigation at sea and, in turn, reduced aircraft performance. Moreover, search area coverage determined the number of scouting aircraft embarked, which in turn became important relative to aircraft capacity.

British officers never developed the vision of carrier strike that Mustin and Reeves had on the American side. The dominant concept was that the battle line would win the decisive battles. The lessons of World War I, particularly Jutland, drove thinking on aircraft. Once reconnaissance planes located an enemy fleet, it had to be prevented from eluding the battle force. Torpedo attack by aircraft was regarded as the best way of slowing an enemy to allow the battle line to destroy it, with spotter aircraft and long-range gunnery. The fighter role was protecting vulnerable spotters. Ironically, the Royal Navy studied the question of battleship vulnerability to aircraft repeatedly during the 1930s but did not consider it a serious problem, at least until December 1941.

The focus by the Royal Air Force on strategic bombing not only contributed to neglect of naval aviation but rejection of the role of close air support for the army. Dive bombing was thus not explored, leaving the Royal Navy unable to experiment with a technique that had the potential to deliver ordnance against ships without virtually assured destruction of the delivery aircraft.

These tactical considerations, coupled with the technical limitations and requirements noted above, led to deployment of multi-purpose planes (because of space limitations) with two or three crew (due to navigation and observation requirements) and poor performance (from mandated low launch/landing speeds and added crew weight) save for exactly those features which the Royal Navy considered most important for tactical purposes—long range/endurance for scouting and, for torpedo planes, carrying heavy weapons. Indeed, in the mid-1930s it depended largely on a single aircraft type to do reconnaissance, spotting, and torpedo attacks. Its fighters did not have to be high performance since the Royal Navy did not anticipate a fleet action in range of land-based aircraft; and from experience it projected that all naval aircraft were inherently low performance. Some British fighter designs were even multi-mission.

Thus perversely, the Royal Navy carefully considered what it wanted carrier aircraft to do tactically and thoroughly integrated them. In 1931, for example, one British publication noted that although America was "considerably ahead of our Fleet Air Arm in the techniques of operating aircraft from catapults and carrier decks, their efficiency in reconnaissance is not up to our current standard." In the early 1930s the Royal Navy



U.S. Navy

Launching seaplane at Pensacola in 1915.

apparently had no reason to believe it was mistaken; it assumed the limitations it faced were universal, did not believe many American claims, and lacked mechanisms for critical analysis. In particular, there was no budget to procure modern carriers and aircraft, no technical staff to work with industry and test aircraft designs, and no method to weigh operational concepts for employing carrier aircraft. When the Royal Navy realized how far behind its Fleet Air Arm was it was too late to recover. Wartime carriers lacked the punch of their American counterparts and many British air groups flew U.S. aircraft.

Only in the late 1930s could Britain do what Reeves and *USS Langley* had done in 1927. Given the different evolution of its carrier aviation, the Royal Navy was never able to consider the next step in carrier development—multiple carrier operations. The U.S. Navy, on the other hand, had been simulating such operations since the early 1920s and exercising them since 1929.

Multiple Carrier Operations

For the U.S. Navy the problem of launching the maximum number of aircraft from a single carrier was nearly solved by the end of 1927. Specific technical issues such as limiting aircraft damage from arresting gear, refueling aircraft on flight and hangar decks, and moving planes on deck at night and in bad weather needed to be refined, but the main problem had been addressed. However another problem—at the center of the carrier revolution—remained: how should multiple carriers be used?

By early 1927 Reeves already had the notion of employing multiple carriers as the core of a fast-striking force and argued for concentration. Based on the wargames in 1926–27 at Newport, he was convinced of the need to deliver a knockout blow against enemy airpower in the opening minutes of any confrontation between carrier forces. This again implied that carrier aircraft could kill carriers. Whether that meant sinking them or merely rendering them incapable of air operations by, for example, punching a hole in their wooden decks was not clear.

USS Lexington and *USS Saratoga* were commissioned in 1927 but had problems requiring a year to fix, including how to run a deck park with more than the handful of aircraft *USS Langley* operated. The ships finally prepared to go to sea for Fleet Problem IX in 1929, the initial test of multiple carriers launching significant numbers of aircraft. Each ship had over a hundred planes. The large

aircraft complement allowed great flexibility, especially when compared with Royal Navy carriers.

In Fleet Problem IX, *USS Saratoga*, with Reeves in command, detached from the main force and made the famous dive-bombing raid on the Panama Canal, though archival records indicate that *USS Saratoga* was detached from the battleship force only because the destroyer escorts lacked the fuel to keep up. There was no intention for the carriers to operate as an independent strike force. Admiral Pratt, commander in chief U.S. Fleet, did not consider the exercise realistic enough to draw major lessons from it.

The aftermath was interesting, however. This problem was followed by a critique presided over by Pratt. The force commander of the *USS Saratoga* group noted, "When we learn more of the possibilities of the carriers, we will come to an acceptance of Admiral Reeves' plan which provides for a very powerful and mobile force . . . the nucleus of which is the carrier."

Carriers were accepted as fleet units. A Bureau of Navigation requirement that line officers pass detailed exams on naval aviation and aircraft characteristics was evidence of institutional acceptance. Yet carriers were not seen as independent strike platforms outside the naval aviation community. As Commander John Towers told the General Board in late 1929, "We can't drop a 500-pound bomb on a battleship."

Debate ensued over carriers as independent strike forces versus their role supporting the battle line. Focus on the strike mission meant fewer defensive assets over the battleship assets they supported. This question was never satisfactorily addressed during the 1930s, in part because of the scarcity of carriers and limited aircraft capabilities. Moreover, little thought appeared to be given to multiple carrier employment—especially when aircraft performance improved—because of restrictions imposed by the Washington Naval Treaty and political considerations. The Naval War College simulation-fleet empirical testing failed to work as well as it had in the 1920s.

little thought appeared to be given to multiple carrier employment because of the Washington Naval Treaty

With respect to treaty constraints, the Washington agreement limited total carrier tonnage. By choosing to convert *USS Lexington* and *USS Saratoga*, the Navy had little tonnage for follow-on carriers, reflected in the unsatisfactory design of the light carrier *USS Ranger*. It was not possible to build many large (as opposed to light) carriers to test operational concepts. But it is not clear what might have happened without the treaty—many more battleships might have been built or Congress might have approved the wrong type of carrier. The Taylor Board recommended in 1927 that five 13,800-ton carriers of *USS Ranger* type be built. Had that actually occurred, the United States might have found itself stuck like Britain, with platforms that could not easily accommodate subsequent developments. At the same time, given that the key metric was aircraft in the air, such a choice was not obviously wrong. Congress saw no reason to increase the number of carriers while further limits were being considered for the 1930 Geneva talks. By the early 1930s economic distress further constrained military spending.

The fact that gaming at Newport did not significantly affect carrier aviation in the 1930s is puzzling. Because the lack of existing assets to test single and multiple carrier propositions did not preclude Newport from simulating them in the 1920s, one can ask why multiple carrier operations were not analogously simulated in the 1930s. Whether gaming and fleet exercise interaction on carrier operations continued, the fact remains that in 1941–42 the Navy tried to answer questions by trial and error which ostensibly lent themselves to prior simulation. Should multiple carriers operate singly or in task groups? How should air groups be composed? With respect to fighter interception, how can enemy bombers be detected and effectively attacked?

Nonetheless, there was progress in developing carrier aviation during the 1930s. Moffett, of the Bureau of Aeronautics, and Chief of Naval Operations Pratt consistently argued before the General Board that the aim of naval aviation was to "bolster the offensive power of the fleet and of advanced base expeditionary forces." As Moffett stated, "The primary function of the main body of carriers is certainly to increase the major attack power of the fleet. . . . " The mid-1930s fast battleship design offered the promise of combined carrier-battleship strike forces.

One barrier to recognizing strike effectiveness was the relative impotence of carrier aircraft as a strike weapon. In the 1930s dive bombers could deliver two 100-pound bombs, and torpedo bombers could carry a 2,000-pound torpedo but were highly vulnerable to fighters and anti-aircraft gunnery because of their bombs. The problem was that carrier aircraft were not yet shipkillers.

The solution was found partly in more powerful engines. World War I had shown that fast, rapidly climbing fighters had a tactical advantage. It was assumed that U.S. carrier fighters would inevitably engage land-based Japanese aircraft, but the need for strong engines was not only driven by military needs. Commercial aviation expanded

U.S. Navy

***USS Shaw* exploding, December 7, 1941.**

rapidly. While the 1920s saw civil aircraft largely used for barnstorming and mail service, reliable instrument flying and an expanding infrastructure made air transport viable and created a demand for high performance aircraft and engines which led to a profitable industry.

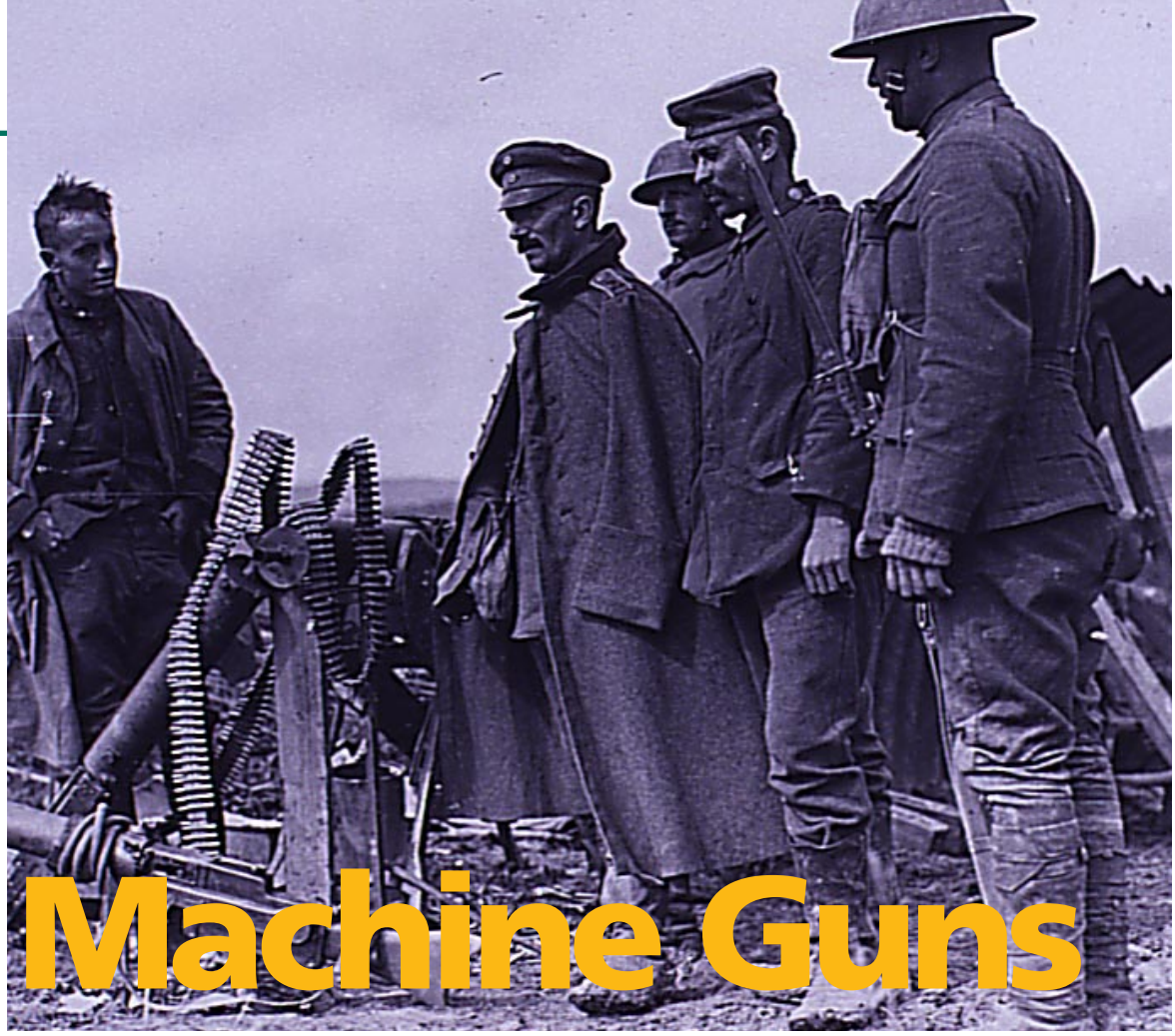
Institutionally, the Bureau of Aeronautics (and the Army) fostered development of aircraft technologies by industry, including radial engines and aeronautical streamlining. Military and civil requirements reinforced each other. Performance rapidly improved throughout the decade until, by 1937, the SBC–4 dive bomber carried a 1,000 bomb almost 600 miles with a maximum speed of 237 miles per hour with interesting technical results. These required greater takeoff and landing speeds. That validated the need for greater takeoff and landing speeds or longer distances. Higher performance drove up fuel consumption and called for added fuel storage capacity. These factors had obvious implications for carrier design. Again, the fortuitously large size of *USS Lexington* and *USS Saratoga* accommodated these developments. The Royal Navy was not so fortunate.

There were also operational consequences. Carrier aircraft could now deliver ship killing ordnance. For scouting purposes, greater speed and longer range permitted faster searches of far larger areas. Moreover, range could be traded for payload, allowing scouts to carry bombs and a given aircraft to perform different missions, thus influencing air group composition. It also meant a radio-equipped scout could detect an enemy, report its position, and attack immediately. Given the imperative to strike enemy carriers at once, this was an important capability.

The cumulative effect of these developments was that the United States possessed a potent albeit latent strike capability by 1941. It was latent because, although individual carriers had some of the capacity envisioned by Reeves during trials on *USS Langley*, the concept of multiple carriers as an independent striking force remained untested. Moreover, there was little sign that aviators themselves consistently held that vision, judging by early carrier operations in 1942.

The Japanese attack on Pearl Harbor was the first operational use of carriers as foreseen by Reeves (the Royal Navy raid in 1940 on Taranto was conducted by a single carrier). Strikingly, the U.S. Navy took some time to follow the enemy lead. Despite the devastating Pearl Harbor raid and other Japanese operations, the Navy fought in single carrier task groups for another year. Even at Coral Sea, Midway, and Guadalcanal, task groups were split (except for *USS Hornet* and *USS Enterprise* at Midway). It was only after the experiences of 1942 that multi-carrier task groups became the fleet standard. By then the ability of carrier aircraft to kill ships and defend carriers was incontrovertible as was the vulnerability of battleships to air attack. The revolutionary effects of naval aviation had become clear. **JFQ**

This article is directly based on a study entitled "The Introduction of Carrier Aviation into the U.S. Navy and the Royal Navy: Military-Technical Revolutions, Organizations, and the Problem of Decision" by Thomas C. Hone, Mark D. Mandeles, and Norman Friedman, which was conducted for the Office of Net Assessment within the Office of the Secretary of Defense in July 1994. A book-length version of the original study will be published by U.S. Naval Institute Press.



Prisoners with captured machine gun, 1918.

U.S. Army Military History Institute

On Machine Guns and Precision Engagement

By PRICE T. BINGHAM

Although technological developments can lead to immense changes in the conduct of war, it is hard to anticipate what form these changes will take. The machine gun illustrates the tremendous impact of innovative technology on land warfare. Precision engagement could dwarf the influence of that weapon. Examining the introduction of the machine gun will help frame the questions we must address today in making the changes necessary to exploit technology and avoid the catastrophic errors that European armies made when the machine gun was initially fielded.

Lieutenant Colonel Price T. Bingham, USAF (Ret.), was formerly chief of the doctrine division in the Airpower Research Institute at the Center for Aerospace Doctrine, Research, and Education.

Machine guns transformed warfare by vastly increasing infantry firepower. The experience in European colonial wars of the last century strongly suggested that greater firepower made it too costly for massed infantry or horse cavalry to cross a killing zone only a few hundred meters wide. The immense advantage of weapons such as the one produced by Hiram Maxim moved Hilaire Belloc to quip:

> Thank God that we have got
> The Maxim gun and they have not

The lethal firepower of six Maxim guns explains why the British suffered only 48 dead at the Battle of Omdurman in 1898 while the Dervishes lost over 11,000. As Edward Arnold noted, "In most of our wars it has been the dash, the skill, and bravery of our officers and men that

have won the day, but in this case the battle was won by a quiet scientific gentleman living in Kent." Although Sir Edward realized the implications of what had happened, many did not.

Morale Versus Technology

While there was some appreciation that improving the lethality of firepower would demand changes in warfighting, European armies were unable to ask the right questions. Not surprisingly, answers to the wrong questions prevented them from anticipating innovations that new technology provided. The French in particular failed to grasp how improved firepower might affect offensive operations. Not having asked the right questions, they arrived at answers that put too much emphasis on morale versus technology and strengthened the conviction that the offensive spirit of their soldiers would suffice. But the experiences of World War I revealed the limits of the human element when it became clear that "three men and a machine gun" can stop a battalion of heroes.

World War I revealed that three men and a machine gun can stop a battalion of heroes

Only after sustaining immense casualties while attempting to cross the killing zones on the battlefield of 1914–18—made possible by developments in firepower such as the machine gun—did armies make dramatic changes in warfighting. By the end of World War II technological changes led to the end of horse cavalry and to the advent of mechanized vehicles for mobility, armored protection, and firepower. The armies of today have further increased their reliance on vehicles not just on the battlefield but across the entire theater. This dependence on vehicles to wage war helps explain how precision engagement technologies can change warfare far more than the machine gun.

Some technologies vital to realizing the potential of precision engagement are found in airborne ground surveillance. In particular, the joint surveillance target attack radar system (JSTARS) has greatly extended the distance at which we can see and target enemy mobile land forces. Its unprecedented performance in the moving target indicator mode makes it possible for this type of surveillance to accurately detect, locate, and track enemy vehicles crossing a vast area in real-time, even in darkness and bad weather.

Surveillance and Targeting

When surveillance and target attack capability is combined with progress in airborne battle management, sensor-to-shooter connectivity, and precision munitions optimized to attack moving vehicles, the military will have an awesome precision engagement capability. Such power would make it possible to destroy vehicles in a killing zone over two hundred kilometers deep, coinciding with the JSTARS field of vision. Recognizing the role vehicles play in modern land warfare as well as the impact weapons like the machine gun had in creating a killing zone only a few hundred meters wide, the role of precision engagement in future land warfare becomes obvious.

When an enemy learns that we can see and precisely target vehicles—as the Iraqis discovered at Al Khafji—it may be increasingly reluctant to attempt movement, not unlike soldiers who are reluctant to move across an unswept minefield. As enemy fear of traveling in vehicles increases, the ability to maneuver operationally or resupply diminishes. Moreover, an enemy will lose much of the mobility, firepower, and armored protection essential to modern land warfare.

Once mechanically paralyzed, an enemy must depend on foot and animal power like preindustrial armies. Yet our forces can take advantage of 21st century technology which gives them dominant maneuver capabilities. Faced with such overwhelming disadvantages, most organized resistance would collapse. Then our combined information, firepower, armored protection, and maneuver dominance should assure victory at relatively little cost. To borrow from Belloc:

> Thank God that we have got
> Precision engagement and they have not

We must learn what changes are needed for our forces to exploit surveillance and precision engagement to deny an enemy use of its vehicles. The development of the machine gun reveals both the importance and difficulty of determining those changes. We learn from that example that changes required by surveillance and precision engagement capabilities will rely on what questions we ask and our thoroughness in answering them.

The Right Questions

We must begin by asking if we have the tools to evaluate the effectiveness of surveillance and precision engagement technologies and to train personnel to use them. Both evaluation and training require the ability to accurately simulate vehicular movement on a massive scale. They also require accurate simulation of how connectivity and battle management affect our ability to rapidly target large numbers of moving vehicles. Simulating the destruction of enemy vehicles is not enough by itself because, like mine warfare, the impact of

Firing TOW missile.

2d Marine Division, Combat Camera (E.J. Young)

Toting anti-armor missile system.

2d Marine Division, Combat Camera (E.J. Young)

precision engagement will be determined by enemy perceptions of the threat and its influence on the behavior of enemy soldiers.

Given the right tools we must ascertain which systems—fighters, bombers, helicopters, or missiles—or combinations of systems can best deliver precision munitions against moving vehicles tracked by JSTARS. Such decisions will require looking at responsiveness, basing availability and vulnerabilities, and delivery cost to include the risk of loss for manned aircraft delivery. Closely related to the issue of which delivery platforms offer what advantages is the question of what types of munitions are best for performing precision engagement against moving vehicles.

Since a primary goal of precision engagement is operational paralysis, it is important to ask how munitions should be optimized to destroy a moving vehicle in the dark or poor visibility. Answering this question requires knowing if achieving the requisite precision depends on being able to exploit signatures created by vehicular movement. (Here we might ask if the anti-radiation missile, which uses radar emissions for terminal guidance, provides a suitable requirements model for a precision munition attack on moving vehicles.) Determining the best option will also require gauging the influence of munition footprints on battle management and connectivity requirements as well as the ability to achieve surprise and intensity to maximize the intimidation of an enemy and minimize friendly exposure.

an objective of precision engagement is operational paralysis—the conditions for dominant maneuver

Understanding how to exploit the advantages of precision engagement makes it essential to ask what changes will be needed in land and air forces. We must determine how a vehicle killing zone with a depth greater than two hundred kilometers is likely to influence close-in battle and thus the air and land forces used to fight it. Given that an objective of precision engagement is creating operational paralysis—that is, the conditions for truly dominant maneuver—we must learn whether inflicting paralysis could make mines and hand-held weapons the principal close-in threat to land forces. This will determine, in turn, the kind of protection vehicles need and whether weapons should be optimized for neutralizing dug-in infantry as opposed to killing tanks.

Precision engagement clearly puts the Armed Forces in a position to exploit truly immense changes in warfighting. It is equally apparent that it will require major adjustments in doctrine and organization as well as weaponry. Fortunately, we are better prepared for a test of professionalism today than when the machine gun was introduced. The proof will come in the questions we ask and our willingness to act on the answers regardless of the resulting changes. **JFQ**

Pathfinder, Vandenburg Air Force Base.
Lockheed (Russ Underwood)

Searching for Policy Coherence: The DOD Space Architect as an Experiment

By JOAN JOHNSON-FREESE *and* ROGER HANDBERG

In an era of declining resources, the search for ways to control and reallocate expenditures has become more focused. Pentagon responses to cost cutting have varied depending on the matter at hand. With regard to military space the answer has involved forming specialized organizations, a time-honored means of dealing with change. Organizational reform can represent a major attempt to introduce change or a mechanism for deflecting real change. This article examines the potential of the recently established Office of the DOD Space Architect.

Prologue

Reform in the area of military space began in 1993 at the direct instigation of key chairmen of congressional committees. Interestingly, several studies completed around that time did not find organization to be a problem. Control and cost savings, it was decided, could be achieved by other means.[1] Reorganization did not become a priority until other remedies were exhausted. However, Congress expressed concern over the apparent inability or unwillingness of the services to coordinate their space efforts, which led to delayed program implementation and budget overruns. Congress wanted a plan that related space programs to funding requests. This concern was not resolved for two and a half years as the Office of the Secretary of Defense, defense agencies, services, and Department of State worked through the various aspects of the problem.[2]

the Air Force was reassured that the space architect would function within its own reporting chain

The challenge was compounded by fears expressed publicly by the other services whenever the Air Force sought to become the decisionmaker for all military space activities.[3] Historically the Air Force has been the dominant space service, a preeminence established by its continuing interest and spending rather than because it is either the exclusive or even primary user of space systems. As users each service has an interest in the availability and flexibility of such systems. Thus while willing to allow the Air Force to assume the lead, the other services are unwilling to forego a space role altogether. Their priorities admittedly lie elsewhere and space represents an exploitable asset rather than an end in itself. This is a factor that favors the Air Force in the long term. Historically, it was the Army that turned over Werhner von Braun and his German rocket team from Redstone Arsenal to the National Aeronautics and Space Administration (NASA) in exchange for support to field additional divisions, but only after a protracted and heated battle which reached the White House. Assurances were sought that the future role of the Army in space was not being relinquished, only von Braun and his expertise. The Army and Navy still advance the same demands in their vision statements.

The institutional memory of the Army is even longer given disputes with the Air Force over tactical air support during the late 1950s and early 1960s, the heyday of Strategic Air Command. In response to a perceived neglect of their needs by the Air Force, large rotary wing air forces were organized under Army control, partially recreating the air forces of World War II. Dependence on support from another service is a situation that most fervently seek to avoid.

Solving military space coordination involved several iterations, with the solution ultimately coming down to creating two staff positions and one board. The posts of Deputy Under Secretary of Defense for Space and the DOD Space Architect were both chartered in early 1995. But the Joint Space Management Board (JSMB) did not take shape until late 1995 after lengthy discussions on membership and authority or—as one participant put it—on the seating plan. The board grew to 26 members to prevent any potential player from being excluded by design or inadvertence. Consequently, it largely became a vehicle for the major members to meet and the minor ones to raise questions or objections. Given the group's size, the adage that "he who takes notes deciphers the decisions that were made" became a reality. Policy guidance, if any is forthcoming, will likely be reduced to the lowest common denominator.

The restructuring of military space management essentially ended by adding more players to the process and introducing more layers of bureaucracy for military space programs to penetrate. Among the services no programs were transferred, consolidated, or eliminated; and no further space staff positions were established. Rather than taking risks, the players tacitly agreed to simply keep what they had, especially the smaller ones. The victory of the weaker players came only insofar as the so-called "space czar" was pushed into relative irrelevancy in terms of actual decisionmaking. The Air Force was reassured that any space architect would function within its own reporting chain. The congressional mandate has been met in principle and on paper even though the result is more bureaucratic than programmatic coordination. That protective response has a familiar ring because defense budgets decline while pressures to perform often increase. Protecting the stake of every

Joan Johnson-Freese teaches international security studies at Air War College and Roger Handberg is director of the Center for Space Policy and Law, University of Central Florida.

NASA

SPACECOM command center, Cheyenne Mountain.

U.S. Air Force (Carol Floyd)

Space Shuttle *Discovery.*

service in space and its relative budget share were critical goals and were achieved, if not entirely to the satisfaction of all services at least enough to meet their essential needs.

Space Architect

The organizationally more tenuous new position, the DOD Space Architect, must be viewed against a backdrop of interservice politics. It might be less tenable over the long haul, with continued support from above and a consequent decline in parochialism from below. Tradition has shown, however, that as the original senior incumbents depart, attention and commitment to such a position by their successors who have no stake in it will wane. They will have programs of their own to support, thereby allowing the return to military space politics as usual.

The DOD Space Architect derives his authority from a memo issued by the Under Secretary of Defense for Acquisition and Technology in 1995 that defines his responsibilities as consolidating space missions and systems, eliminating vertical stovepiping, integrating acquisition and future operations, and thereby improving space support to military operations. But in reality his office is less robust when it comes to the fine print: "the architect will have significant influence over acquisition decisions but will have no direct acquisition authority per se. . . . For day-to-day activity, the architect will coordinate directly with the performing organization."[4]

The DOD Space Architect is linked to subordinates or equals for purposes of coordination. The only command line extends to his reporting authority, namely, the Under Secretary of Defense for Acquisition and Technology.

DOD

NAVSTAR global positioning system.

The former CEO of Avis, Robert Townsend, who has earned a reputation as a management consultant, made an observation that seems to apply in this situation:

The thing that shows up a problem on an organizational chart is the dotted line . . . some compromise has been made in the organization. Some problem has not been faced, it has not been solved, and it is an unsatisfactory solution. You can look at an organizational chart and just pick the problems without even knowing what the company does . . . by looking at the dotted lines. They are a sign of a problem, sign of muddy thinking, sign of compromise, and a sign of unhappiness, frustration, and mediocre performance.[5]

Townsend's comment identifies the problem with the space czar's position—he does not command or control anything, contrary to the impression conveyed by his title.

The first architecture developed was released in August 1996 and deals with military satellite communications (MILSATCOM). It is to be followed by architectures on space control and satellite operations. Originally it was thought that the office of the DOD Space Architect would develop several alternatives for presentation to JSMB, which would choose among them, but that was not feasible because of the cumbersome nature of the board. Instead a single architecture was develped to pass to the services for consideration in acquisitions. Furthermore, it was envisioned that the role of the Space Architect in implementation would be minimal, fundamentally that of a monitor. However, moving MILSATCOM architecture to the services proved difficult, and the architect's office needed to play an active role. Indeed, another full year of transition planning was scheduled, indicating a reluctance on the part of the stakeholders to accept the architecture without hesitancy. In reality, they were not compelled to embrace it at all.

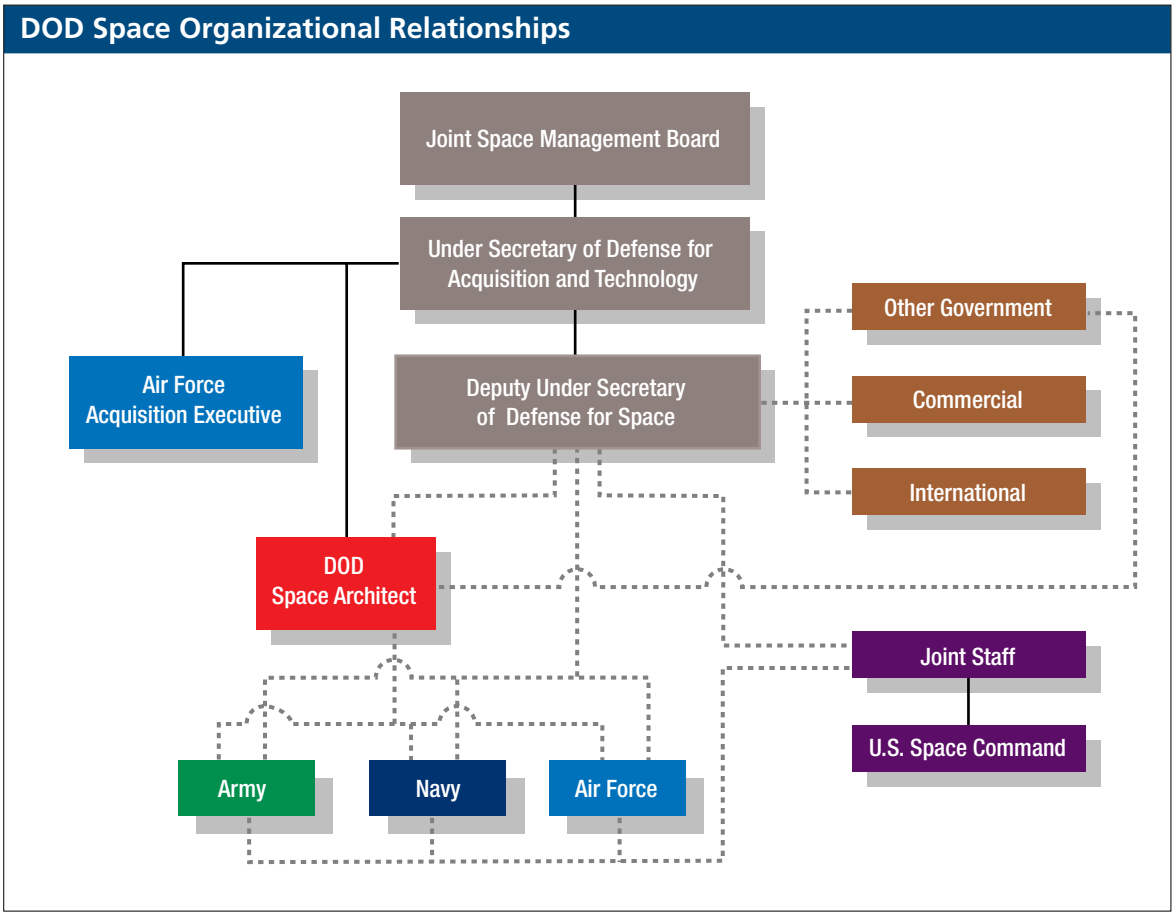
Frankly, the DOD Space Architect is a staff position with no direct lines to command authority (see figure on opposite page). In a hierarchy such as the military, that can be an Achilles heel of fatal magnitude because one bargains from a position of known weakness. That is especially a problem for a position with high external (congressional) expectations for success. Rather than responding, any service unhappy with his plans or advice can feel relatively safe stonewalling or appealing to higher levels of authority beyond the access of the Space Architect. That type of day-to-day grinding down by opponents is what undermines such "coordinating" positions over the long haul.

By virtue of his place in the hierarchy, the DOD Space Architect has no real constituency. Service space chiefs relate to their services while the Space Architect competes with the commander in chief, U.S. Space Command (CINCSPACE), who speaks as an operational commander, a much more authoritative role. CINCSPACE has indicated that his command is entrusted with most military applications.[6] In addition, he leads the effort to develop joint space doctrine that will expand the utilization of space from a single asset to an aggregate of capabilities, a much-needed philosophical step forward. Moreover, as discussed earlier, when such positions are created by civilian officials who depart—either voluntarily or in a routine political reshuffling—the positions become less tenable. Subsequent under secretaries will arrive with their own agendas on how to achieve the coordination demanded by Congress, or at least on how to appear responsive.

There are serious problems with placing the position under the rubric of acquisition because it may exacerbate an already difficult situation since that office is "buying" rather than prioritizing goals. Theoretically, such decisions should be made before reaching the acquisition level. If not, the problems worsen since priorities have not been agreed upon. With a declining budget (relative to inflation), that is a recipe for disaster both fiscally and operationally.

The DOD Space Architect is further weakened and confused by the fact that the other new position, the Deputy Under Secretary of Defense for Space, has leverage over the space acquisition

DOD Space Organizational Relationships



Source: Department of Defense Space Program: An Executive Overview for FY 1998–2003 (March 1997).

process. Beyond the new positions is the realm of space in the intelligence community. The DOD Space Architect assists the deputy under secretary and submits proposed architectures to his office; this new official also has responsibility for formulating a national security space master plan that apparently provides a framework for future architectures developed to fit into joint space doctrine. There are lots of plans but little evidence of change.

the space architect was deliberately designed to be anything but a central player in military space

Furthermore, the plan's recommendations on space-based warning, reconnaissance, and intelligence systems compete with advice from others within OSD, such as the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence who has direct access to key participants in decisions on the system. Meanwhile, other players such as the Defense Mapping Agency and the Navy have initiated projects which compete with programs being developed within the office of the DOD Space Architect.

The Lesson

Although the intent of this analysis is not to dwell exclusively on the negatives, the Space Architect does appear to have been deliberately designed to be anything except a central player in military space. The responsibilities implied by his title and charter are not matched in reality with either authority or muscle, especially in terms of budgetary clout. The office will likely produce highly competent, technically sophisticated architectures which will be viable only as long as all parties concur or sufficient political will exists above the level of the DOD Space Architect to enforce the plan through real budget choices.

At the second Space Policy and Architecture Symposium held in February 1997, laudatory comments abounded on the efforts to develop MILSATCOM architecture. It was emphasized that the process provided a forum for healthy discussion. But the jury is still out on the issue of transition, and that will determine whether the architecture is a legitimate basis for planning or

simply an academic exercise. Legacy programs and already-planned modernization programs provide near-term spikes in implementation, beyond cultural and turf issues.

With regard to congressional interest, the object was a realistic long-term plan for military space activities that would be followed within reason to maximize declining budgets. However, initial indications are that developed MILSATCOM architecture is based on optimistic projections of its cost and hence is not a near-term money-saver. Congress is unlikely to endorse a plan that is expensive in the near term in hope of long-term savings. Furthermore, an enforcement mechanism is needed. Congress may have to act, at least in terms of having the services include architecture in building individual program objective memoranda (POMs) and future years defense programs (FYDPs). Members of Congress want the office to succeed. Perhaps the irony is that Congress wants DOD to adhere to a plan subject to its own sometimes fickle annual review.

Without some form of enforcement, implementation is unlikely given the history of defense acquisition. Past broad-based acquisition reform has been characterized by dramatic public gestures: initial successes and ultimate ineffectuality once the spotlight is shifted.[7] The issue is not even willful resistance in particular (though that has occurred), but rather the effects of inertia. Changing work habits is difficult even where organizational leadership is highly motivated. Given a crisis or near crisis atmosphere at higher levels, follow-through becomes hard, especially if the old system works. It might function more efficiently or cheaply with reform, but that is next week's problem. Unfortunately, next week never comes—the issue is how to handle the problem now.

In at least one instance of motivated leadership, however, near-term programmatic success in acquisition reform has shown promise. The suggestions raised concerning control and reduction of costs associated with space rather than reorganization have made headway. Indeed, the Air Force evolved expendable launch vehicle (EELV) program has focused on streamlining the developmental acquisition strategy to bring down launch costs.[8] A specific directive as part of that strategy is to limit the management bureaucracy. If support and momentum can be sustained until the vehicles are built, something meaningful will have been accomplished, though the vehicles will then likely be absorbed into "the system."

Fads come and go, but policy evolves slowly. The common preoccupation of the bureaucracy is logrolling to protect one's interests. The architectures developed will probably take their place among the growing body of space policy studies, particularly space transportation studies, which futurists have used to generate a cottage industry. Change will occur but much more slowly than desired by Congress, which will probably revisit the issue in several years to discover what went wrong. The answer then, as now, will be that good people cannot make untenable systems work, especially when budgets decline. The DOD Space Architect is not an experiment that failed; the conditions just were not ripe for such a position. **JFQ**

NOTES

[1] Library of Congress, Congressional Research Service, Science Policy Research Division, "Military Space Programs in a Changing Environment: Issues for the 103d Congress," prepared by Marcia S. Smith, 92–879SPR (December 1, 1992); and U.S. Government Accounting Office, National Security and International Affairs Division, *Military Space Programs: Comprehensive Analysis Needed and Cost Savings Available,* GAO/NSIAD–94–164 (April 14, 1994).

[2] A succinct summary of the negotiations and problems is found in John L. Insprucker III, "The New DOD Space Management Process: A Critical Analysis" (Maxwell Air Force Base, Ala.: Air War College, April 1996).

[3] Steve Watkins, "Space Chiefs Assail McPeak Plan," *Air Force Times,* April 18, 1994, and Steve Weber, "Lionetti Defends Army's Space Role," *Army Times,* August 29, 1994, p. 30.

[4] Ibid.

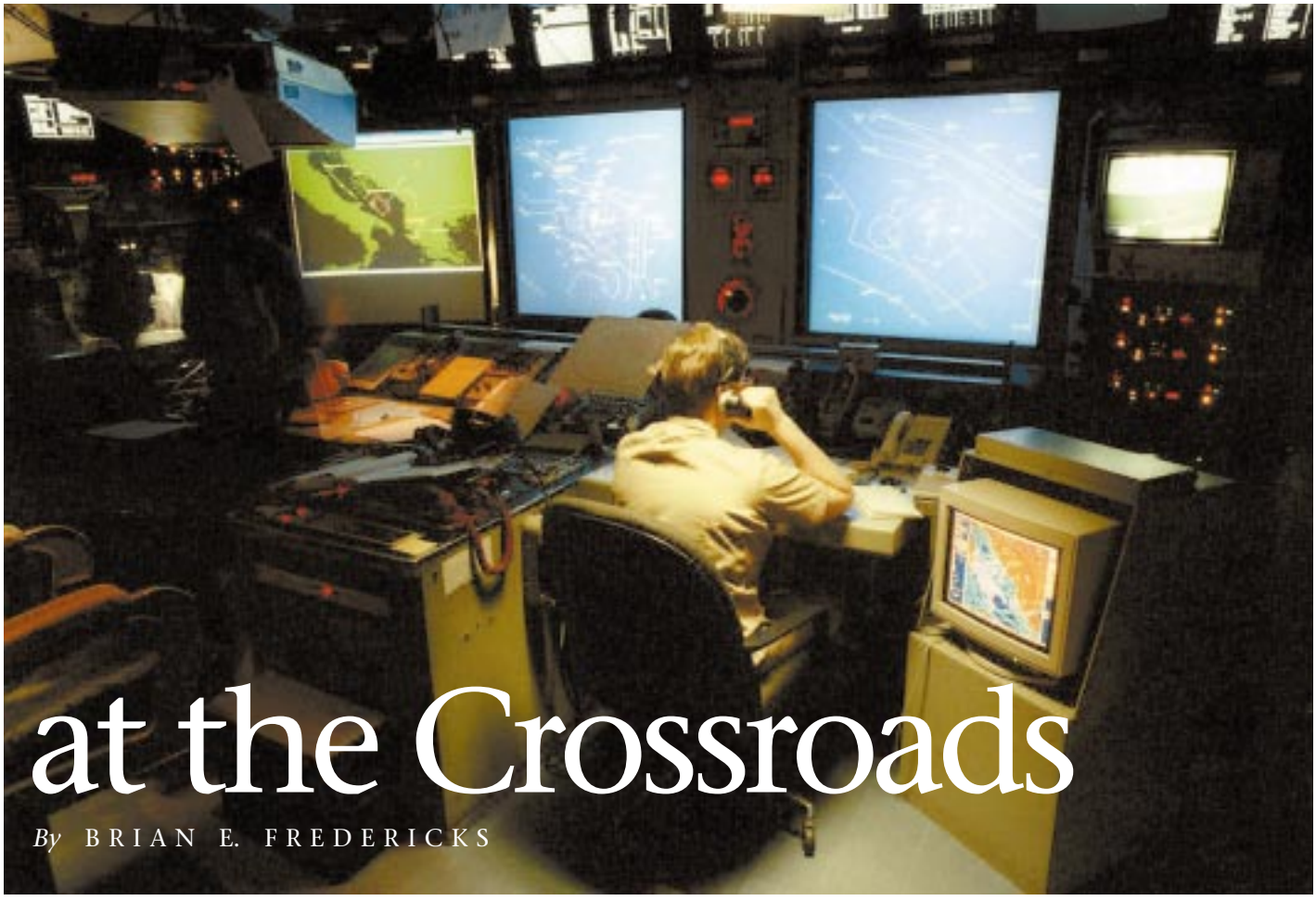
[5] Robert Townsend, *Still Further up the Organization,* Nightengale-Conant Audio, 1989.

[6] Howell M. Estes III, "Space and Joint Space Doctrine," *Joint Force Quarterly*, no. 14 (Winter 1996–97), p. 61.

[7] See Brenda Forman, "Wanted: A Constituency for Acquisition Reform," *Acquisition Review Quarterly,* vol. 1, no. 2 (Spring 1994), pp. 90–99.

[8] Robert K. Steele and Peter L. Portanova, "EELV: New Acquisition Strategy for a New Launcher," *Aerospace America,* no. 7 (July 1996), pp. 38–43.

Information Warfare at the Crossroads



U.S. Navy

Information center aboard Aegis cruiser.

By BRIAN E. FREDERICKS

The issuance of DOD Directive S3600.1, "Information Operations," in December 1996 opened a new phase in information warfare. Ever since a highly classified, limited distribution directive was released over four years ago, information warfare has continued to mature within the defense establishment. The recent directive captures these changes, including a concept of information operations to take us into the next century.

Information warfare has influenced strategic thinking and also received notable attention in the literature. *Joint Vision 2010* spells out a forward-looking conceptual template to establish a force that can dominate the future battlefield against a full range of threats. It covers offensive and defensive information warfare and states a requirement to collect, process, and disseminate an uninterrupted flow of information to conduct information operations.

Colonel Brian E. Fredericks, USA, heads the Information Operations Division in the Operations, Readiness, and Mobilization Directorate at Headquarters, Department of the Army.

Evolution of Information Warfare

DOD Directive TS3600.1 formally launched the concept of information warfare in 1992. As with many other policies, it offered general guidance. Its broader implications have emerged over time through studies, wargames, and conferences. From the outset, wider understanding of information warfare was limited by security considerations.[1] The lack of authoritative details on its role in the public domain was underscored by the prolonged absence of an approved unclassified definition.

In January 1994 the first significant government explanation of information warfare was

contained in the annual report of the Secretary of Defense. Although not providing a definition, the report stated that information warfare:

consists of the actions taken to preserve the integrity of one's own information systems from exploitation, corruption, or destruction, while at the same time exploiting, corrupting, or destroying an adversary's information systems and, in the process, achieving an information advantage in the application of force.[2]

This description clearly underscored the offensive and defensive aspects of information warfare. Furthermore, the report stated that it is an integrating strategy which enables a force to act more decisively, thus increasing the likelihood of success while minimizing both casualties and collateral effects. Perhaps the most comprehensive discussion of this subject was contained in *A Strategy for Peace: The Decisive Edge in War* published by the Joint Staff in 1996. It states that information warfare applies across a range of military operations on every level of warfare. While it is only one instrument of national power, information warfare contributes to deterrence by defusing crises and delaying or eliminating the use of force. Defensive information warfare integrates and protects information and its systems though offensive information warfare affects enemy information and information systems.[3]

joint doctrine presents command and control warfare as a subset of information warfare

Information warfare has critical links to command and control warfare, which is defined in CJCS Memorandum of Policy 30 (March 1993) as:

The integrated use of operations security (OPSEC), military deception, psychological operations (PSYOP), electronic warfare (EW), and physical destruction mutually supported by intelligence to deny information to, influence, degrade, or destroy adversary command and control capabilities, while protecting command and control capabilities against such actions.

Joint doctrine presents command and control warfare as a subset of information warfare employed in operations that specifically attack and defend the command and control target set. Designed as an essential part of overall theater campaign plans, command and control warfare is implemented during "joint military operations when U.S. military forces unilaterally or as part of an allied/coalition force are opposed or threatened by an organized military or paramilitary force."[4] Its stated purpose is to "decapitate the enemy's command and control from his body of force, to paralyze them and invalidate any potential advantage the adversary may have."[5]

While command and control warfare focuses on enemy military command and control when military force is applied, it is that dimension of information warfare occurring outside the domain of the traditional battlefield that has generated the greatest attention and is widely viewed as having the greatest promise. Technological developments in electronics, communications, electro-optic, and computer systems, together with the application of established disciplines like psychological operations and military deception, offer new ways to achieve national security goals. As has been noted, information warfare could destroy the ability of a society to wage war without firing a shot by wrecking its information infrastructure. In an era of information warfare territory offers no sanctuary, borders are traversed undetected and in milliseconds, and targets are anywhere.[6] Future targets will include not only military systems but also banking, telecommunications, power grids, transport, and pipeline networks.

The ability to deny an enemy the means to conduct war by destroying its information systems has a profound deterrent effect. Information warfare has the potential of filling a void between sanctions and lethal force. Its deterrent value increases as a potential enemy grasps its effectiveness and our willingness to use it. As one senior officer characterized the challenge of information warfare: "[It] is to get inside [an enemy] decision loop, to change his perception so that clearly before he decides to start a conflict he knows deep down he is going to lose."[7]

Defensive information warfare has steadily garnered recognition in recent years. As the Defense Information Systems Agency found in 1996, more than 95 percent of DOD worldwide telecommunications needs are satisfied by commercial carriers, and the defense establishment is an integral part of a growing global information infrastructure that transcends industry, media, and the military. Defensive information warfare identifies and protects vulnerabilities that arise from this increased reliance on the worldwide information infrastructure.

Creation of the Presidential Commission on Critical Infrastructure Protection in 1996 underscored heightened awareness of the need for a national strategy for assuring the continued operation of vital infrastructures. These include telecommunications, finance, electrical power, water, pipelines, and transportation systems. An increasing reliance on high technology is the thread linking these systems. The threats fall into two categories: the more traditional physical threats and those emerging from "electronic, radio-frequency, or computer-based attacks on the information or communications components that control [the] critical infrastructures."[8] The

U.S. Navy (Jeffery Viano)

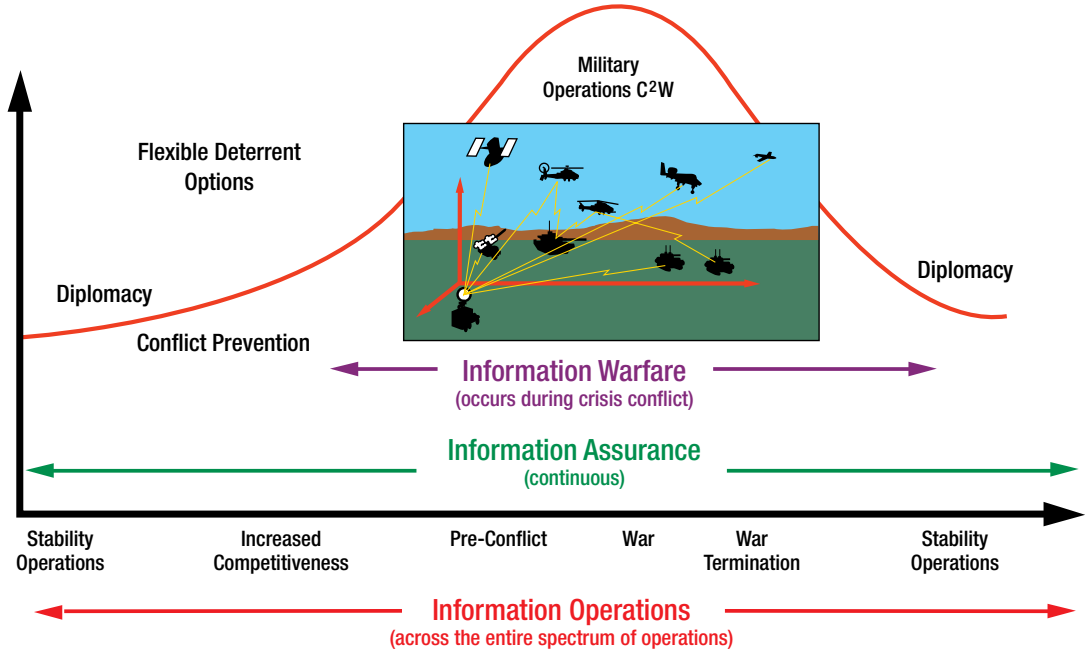
Rimpac '96.

stated goal of the President's commission is to propose solutions to keep pace with evolving threats in a rapidly changing technological environment. An integral part of the commission's charter is to establish a comprehensive outreach program with the private sector which owns and operates many of the critical infrastructures.

This civilian involvement gets to the core of the recent evolution of information warfare. Conceived as an internal response to take advantage of both opportunities and vulnerabilities resulting from the information explosion, DOD found that the concept transcends the military. If the real promise of offensive information warfare is in both peace and the initial stages of crisis, then its success will require direct National Command Authorities involvement and close coordination and participation by various government agencies. Similarly, the most daunting challenge is not the impact of defensive information warfare on military effectiveness, but rather the vulnerabilities of the national infrastructure. The global information explosion is a double-edged sword. Just as we can target an enemy, an enemy can target us. The more sophisticated we become the greater our vulnerabilities. As the Joint Security Commission reported in 1994: "If instead of attacking our military systems and data bases an enemy attacked our unprotected civilian infrastructure, the economic and other results would be disastrous."[9]

Another dimension of information warfare is the influence of the media such as CNN. The information revolution, with live reports from the battlefield, has transformed warfare. The graphic portrayal of conflicts in near real time has intensified revulsion around the world to the death and destruction of war which an enemy can exploit. The U.S. Government must remain fully engaged in media wars by transmitting its own message,

The Realm of Information Operations



particularly early in a crisis. This is key to a successful information warfare deterrence policy.

Clearly information warfare is a national issue transcending DOD, but no overarching national policy exists. The national security strategy issued in February 1995 briefly touched on the defensive component of information warfare:

We also face security risks that are not solely military in nature. . . . The threat of intrusion to our military and commercial information systems poses a significant risk to national security and is being addressed.[10]

Key Elements

The Office of the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (C^3I) gave consideration to issuing a revised version of DOD Directive TS3600.1 in 1996 with three objectives. First, given the broad interest in information warfare, the goal was to ensure its classification level did not limit widespread distribution. Second, the directive was designed to both accommodate internal DOD requirements and facilitate critical interagency coordination. Finally, it clearly needed to emphasize the full potential of information warfare throughout the range of military operations with a primary focus on preserving the peace and deterring conflict escalation. Using these objectives as guidelines, the directive was rewritten, coordinated, and officially approved in December 1996 by the Deputy Secretary of Defense. Key aspects of it are as follows.

clearly the promise of information operations is in its potential to defuse crises

Classification. Although the directive is classified, much of it is unclassified, including key definitions. The original classified definition of information warfare found in the previous directive hampered initial DOD efforts to instill awareness of the military implications of reliance on information technology with growing sophistication and connectivity. This created a void that defense analysts and others filled with a myriad of unofficial unclassified definitions. That effort led to the misperception that DOD lacked a coherent direction in this area. As information operations mature, it is likely that the next version of the directive will in fact be unclassified.

Revised conceptual framework. A basic change in the new directive is the establishment of information operations vice information warfare as the overarching conceptual framework. Information operations now encompasses those activities across the full range of operations designed to exploit the opportunities and vulnerabilities inherent in military dependence on information. Under this new construct information warfare is a subset of information operations. Information warfare is now specifically limited to activities conducted during "times of crisis or conflict." Information operations are intended to deter conflict, protect DOD information and information systems, and, if deterrence fails, attain specific objectives against an enemy. Clearly the promise of information operations as contained in the new directive is in its potential to defuse crises.

By adopting information operations, DOD has embraced terminology that is acceptable in the interagency arena and promulgated a concept that can better ensure that its information operations policies and plans are fully integrated into national security objectives and strategies. Information operations take into account the fact that other agencies tended to distance or even disassociate themselves altogether from the term *warfare*. Outside DOD the information warfare concept was previously viewed as overly fixated on crisis and conflict. By now embracing information operations, DOD, in partnership with other agencies, can truly address the full range of military operations including what *JV 2010* refers to as peacetime engagement. DOD adoption of information operations is particularly relevant to the military's role in addressing the vulnerabilities of our national information infrastructure and the need to develop a coherent national strategy to improve our posture in this area.

Information assurance. The directive reinforces DOD interest in the protection arena by formalizing information assurance, defined as information operations:

that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. This includes providing for restoration of information systems by incorporating protection, detection, and reaction capabilities.

The term originated within the Office of the Secretary of Defense but has received widespread acceptance throughout the government and increasingly in industry.

Warfighters require instant, reliable access to diverse information including secure video teleconferencing, detailed imagery from national sources, and intelligence, logistics, and other data from various locations. There is a growing awareness among commanders—both those deployed and in the CONUS deployment and sustaining base—that it is no longer sufficient to simply establish communications and automation links. Now they must recognize and act to minimize inherent vulnerabilities in systems. While the military has traditionally secured classified information, particular attention is needed for unclassified

U.S. Navy (Jeff Vano)

Unmanned aerial vehicle.

but sensitive information pertaining to personnel, logistics, and financial matters. Disruption of such information can adversely impact on planned and ongoing operations.

Within DOD, each service has established a computer emergency response capability and vulnerability assessment teams to complement the earlier efforts of the Defense Information Systems Agency. This has been driven by necessity, given the explosion of computers at every level of command down to the tactical. The Army, for example, deployed teams from the Land Information Warfare Activity to Bosnia in order to identify and help alleviate vulnerabilities in its deployed automated information systems.

DOD Directive S3600.1 recognizes that just as DOD is confronting the new challenges and perhaps leads the rest of government, a coherent vulnerability assessment and emergency response program is necessary which transcends the government and embraces the civil sector. The seam between the civil and military sectors is blurred. Coordination across the government and with the private sector must occur daily, not just during crisis. Information assurance as a subset of information operations provides this framework with a comprehensive strategy that, through a team approach, protects not only DOD and government equities but also proprietary interests of the civil sector.

Sensitive information operations. The directive terms information operations activities that demand special review and approval as sensitive information operations. Such operations involve those activities that require either approval by the Secretary of Defense or coordination in the interagency arena. They can be offensive or defensive; and because they involve complex legal and policy issues, they require national-level coordination.

For example, an enemy attack on a commercial system that manifests itself in a DOD network raises issues that call for both interagency coordination and improved links with the private sector.

Although the sensitive information operations concept is in the formative stage with the specifics still under development, elements of the approval process exist. A psychological operations campaign must have interagency approval before implementation by CINCs. In Haiti, prior to and during Uphold Democracy, all psychological operations products were approved through the National Security Council process.[11] As sensitive information operations procedures evolve, they will provide a better mechanism to synchronize all information operations activities, both offensive and defensive, in support of national security.

Human dimension. As information warfare developed, the role of people in general and individual personalities as a pivotal component of information systems emerged. An objective of information operations is to shape the environment and influence decisions. Ultimately, it is people who make decisions based on information from information systems. In this regard, the importance of psychological operations to information operations has been recognized and its contributions have been validated in operational deployments. As an integral part of every recent contingency—Somalia, Haiti, Rwanda, and Bosnia—psychological operations have been called the flexible deterrent option of first choice.

1st Combat Camera Squadron (Jerry Morrison)

Preparing Patriot batteries, Roving Sands '97.

The focus is to generate opportunities to deter or defuse a crisis by applying advanced information technology to influence world opinion and the leadership of potential enemies.

Civil affairs and public affairs. Given the lessons learned in Haiti and Bosnia, both civil affairs and public affairs also contribute significantly to information operations. Coordination of public affairs and information operations plans ensures that public affairs supports the overall objectives of a commander. The focus is on providing a timely, accurate flow of information to external and internal audiences. Similarly, civil affairs activities can supports the objectives of information operations by influencing or controlling indigenous infrastructures in foreign areas. Civil affairs is particularly important to information operations because such activities involve interface with key organizations and individuals.

The Way Ahead

We stand at an information operations crossroads. Now that the lengthy coordination and somewhat contentious process that went into formulating this new concept is over, emphasis must be put on developing a campaign for a full appreciation of information operations inside and outside of DOD. This must be a team effort involving the Office of the Secretary of Defense, Joint Staff, services, and CINCs. Several important steps must be taken.

Draft joint information warfare doctrine must be revised to accommodate information operations. Thought should go into refocusing doctrine for information operations that includes the full range of military operations and recognizes its critical interagency implications. This process is now underway with the draft of Joint Pub 3-13, *Information Warfare*.

The concept of command and control warfare served DOD well in applying the lessons of the Gulf War. Now with the refocusing of information warfare on crisis and conflict, it is appropriate to examine whether it should subsume and replace command and control warfare, which is focused on a single albeit important target set, command and control. There are, however, other important information target sets warfighters can attack and must protect to achieve the full impact of information warfare. Having one term that captures the warfighting component of information operations will simplify the explanation and promote understanding of information warfare.

Vulnerabilities in the information infrastructure have a direct impact on national security. Information assurance would provide timely, accurate, and relevant information wherever and whenever needed. Protecting information is receiving increasing attention in DOD as evidenced

by both standing computer emergency response capabilities and vulnerability assessment teams. However, this mission transcends the defense establishment and even the Federal Government, for most of the infrastructure is in the private sector. The Presidential commission is a first step toward developing a national strategy, and DOD must remain intensely engaged in formulating and implementing commission recommendations. Information assurance recognizes the need for collaboration in protecting national and defense information infrastructures. DOD must focus on reducing its vulnerabilities each day as well as in time of crisis. The Assistant Secretary of Defense (C^3I) has taken the lead in developing an information operations master plan which emphasizes the importance of information assurance.

information assurance recognizes the need for collaboration in protecting infrastructures

A range of organizations has emerged to address information warfare. Each service has its own information warfare center, and several joint agencies have been established including the Joint Command and Control Warfare Center. These organizations have defensive as well as offensive responsibilities to broadly address information operations and not simply information warfare. Redesignating some if not all of these organizations to reflect this broader focus rather than information warfare will help institutionalize information operations. It will also reinforce the goal of information operations, as expounded in the new directive, to "secure peacetime national security objectives, deter conflict, protect DOD information and information systems, and shape the information environment." As part of the Joint Warfighting Capabilities Assessments, the Joint Staff—in concert with the unified commands and services—is examining how best to organize for information operations.

The publication of an information operations directive sustains the momentum generated by the development of information warfare. More importantly, it builds on the realization that information warfare is not an exclusive DOD domain. If the potential of offensive information operations lies in deterrence and defusing crises, interagency coordination is essential. Creation of sensitive information operations recognizes that some activities entail legal and policy issues that transcend defense concerns and require national-level approval. Similarly, those aspects of defensive information operations—now known as information assurance—must involve other agencies of government as well as the private sector. The ongoing Presidential Commission on Critical Infrastructure Protection holds great promise. While DOD must actively participate in this initiative and fully implement follow-on recommendations, it does not have the lead.

This directive requires change in policy and doctrine, and it is important that information operations be quickly and uniformly embraced across DOD. Supporting documentation should be revised to incorporate the latest lessons of the global information explosion. Terminology in the new directive is easily understood, so the emphasis should be placed on implementation, not interpretation. DOD must now focus on exploiting new opportunities against potential enemies and prevent exploitation of the Nation's inherent vulnerabilities. **JFQ**

NOTES

[1] Defense Science Board, *Report of the Defense Science Board Summer Study Task Force on Information Architecture for the Battlefield* (Washington: Office of the Under Secretary of Defense for Acquisition and Technology, October 1994), p. B–16.

[2] Les Aspin, *Annual Report to the President and Congress* (Washington: Government Printing Office, January 1994), p. 244.

[3] Joint Staff, *Information Warfare: A Strategy for Peace: The Decisive Edge in War* (Washington: Joint Staff, 1996), pp. 4–5.

[4] Joint Pub 3-13.1, *Joint Doctrine for Command and Control Warfare (C^2W)*, p. I-6.

[5] Jim Gray, "Turning Lessons Learned into Policy," *Journal of Electronic Defense*, vol. 16, no. 10 (October 1993), p. 88.

[6] Bruce Wald and G.A. Federici, *Defending the Civilian Information Infrastructure: Does DOD Have a Role?* (Alexandria, Va.: Center for Naval Analysis, April 1995), p. 4.

[7] John J. Sheehan, speech at the activation ceremony of the Joint Command and Control Warfare Center, San Antonio, October 13, 1994.

[8] Bill Clinton, Executive Order 13010, Critical Infrastructure Protection (Washington: White House, July 15, 1996), p. 1.

[9] Joint Security Commission, *Redefining Security: A Report to the Secretary of Defense and the Director of Central Intelligence* (Washington: Joint Security Commission, February 28, 1994), p. 103.

[10] Bill Clinton, *A National Security Strategy of Engagement and Enlargement* (Washington: Government Printing Office, February 1996), pp. 12–13.

[11] Henry H. Shelton, *PSYOP Support to Operation Uphold Democracy* (Fort Bragg, North Carolina: XVIII Airborne Corps, May 4, 1995), p. 6.

Leveraging Technology for Joint Training

By JACK WALKER

U.S. Army (Lance Cheung)

The promise of modeling and simulation for training is being fulfilled with the introduction of updated models. Better simulations are also on the way as object-oriented models—with greater flexibility and full interoperability—come on line in the next five years. But another revolution is occurring, albeit with less fanfare. It involves leveraging new educational technologies—beyond modeling and simulation—to meet the needs of joint education and training. While this innovation will have a significant impact on education and training, it will not fulfill its potential unless joint and component commanders understand what the technologies represent, what they can and cannot do, and how to integrate them into traditional instructional methodologies.

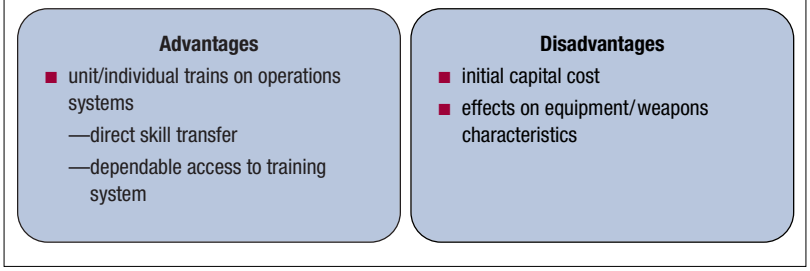
The technologies can control and reduce costs, deliver education and training on demand or just in time, tailor delivery to individual student needs with simultaneous language translation, provide training certification, reduce or eliminate safety concerns in hazardous training, and enable students to collaborate without leaving their duty stations; in some cases, they may fully participate from home. When these technologies are integrated with models, simulations, and more traditional classroom methods the payoff will be better trained joint and combined forces.

Major General Jack Walker, USA (Ret.), who commanded infantry, aviation, and armor units during his military career, is president and chief executive officer of Cubic Applications, Inc.

Technologies and Applications

Although there is no generally accepted taxonomy of educational technologies, they can be classified as embedded training, computer-based instruction, distance learning, and hybrids. One area in which the military is ahead of industry is embedded training, which is defined as a training capability designed or built into operational systems. Its key feature is allowing participants to use the same equipment in training as is employed operationally. Rather than practice tank gunnery on a simulator, for example, embedded training permits the tank crew to practice in their assigned tank with little or no external support. In effect the tank becomes a simulator and the crew gets instant feedback on their performance.

Figure 1. Embedded Training



While each service emphasizes embedded training—the current Chief of Staff, U.S. Army, has stated that all new systems must have embedded simulation—the Navy Aegis combat training system (ACTS) is especially impressive since it permits full-up training of the Combat Information Center team on the Aegis system at sea or in port. In addition to team training, individual operator training is also embedded in the ACTS lesson control program.

Embedded training offers many advantages over a stand-alone simulator, including access by a training audience and the direct transfer of the learning experience from training to operations. But embedded training initially can be more expensive since the system components must be engineered to withstand the same physical conditions as the operational system. Also, the additional weight of the training system can affect range and fuel consumption, a significant consideration for aircraft. Moreover, the training may not require a simulator for each operational system.

interactivity is one key to successful computer-based instruction

Computer-based instruction generally includes a broad range of hardware and software; the term is usually synonymous with computer-based training. Although computer based-instruction has been around for more than a decade, recent excitement over its vast potential and application to a wide audience is related directly to the proliferation of multimedia personal computers. These computers with powerful processors and built-in audio and video are found in most military units and many homes. No longer must computer equipment be procured exclusively for instructional purposes. Instead, computers devoted to administration, operations, and logistics can be used for individual and collective training. This means managers of education and training programs who are considering the development of computer-based instruction often do not have to factor in the considerable initial capital outlay to buy hardware but can devote their limited resources to courseware development.

Computer-Based Instruction

A common way of delivering computer-based instruction is compact disks (CD–ROMs). Cheaply reproduced and with a large capacity for storing data, CD–ROMs permit the incorporation of audio and video into computer-based instruction, moving the standard from simple page turning (consisting of text and graphics) to multimedia applications with sound, graphics, animation, and video reinforcing the learning experience. The results: lessened training time, increased retention, consistent presentation, and enthusiastic students.

When pre- and post-test and records management functions are included, computer-based instruction allows students and trainers to diagnose individual needs (preventing the waste of time on instruction with which students are familiar), test mastery of content to the required standards, and even report course progress, completion, and difficulties with courseware or content to course managers. Even better, the availability of graphical course authoring software, such as *Toolbook*, permits the computer-literate (not only programmers) to learn quickly to create courseware (though functions such as records management and advanced animation require programming familiarity). For several years the Air Command and Staff College has provided both faculty and students with the opportunity to do just that, and its graduates depart with CD–ROMs containing useful tools and tutorials created by faculty and students.

Interactivity is one key to successful computer-based instruction. Well-designed interactive courseware reinforces learning and requires students to participate via a graphical user interface that allows students to intuitively navigate

through courses and use computers without having to know much about them. And students set the pace of instruction with the freedom to interrupt it at any time and return to the same point when desired (bookmarking).

Figure 2. Computer-Based Instruction

Advantages	Disadvantages
■ can use computer systems already on hand ■ powerful multi-media capabilities ■ lower life cycle costs than traditional instruction ■ can include full testing and records keeping ■ advanced authoring skills not required	■ initial development cost

A major concern with computer-based instruction is the up-front investment for design and development. There is no accepted rule of thumb for comparing the cost of developing interactive courseware with platform instruction. But what is certain is that the cost of repeatedly delivering platform instruction—for faculty and student time, per diem, and overhead—quickly pays for the initial investment in courseware. In the case of one joint education project, the life cycle cost of presenting a 30-hour program of instruction in a classroom was four times the estimated outlay for delivering it on CD–ROM, including development. Well-designed courseware is easily updated as the content changes.

While application of this technology is powerful and has been demonstrated, its educational use—especially in professional military education—is only now being recognized. This challenge offers the possibility for tremendous payoffs in joint and combined warfare.

Education involves both cognitive learning (knowledge) and affective learning (attitudes) and attempts to prepare students to face situations and solve problems not yet defined.[1] Computer-based instruction can contribute to education as well. One important application is in the area of knowledge levelers, interactive courseware which ensures that all students are at a baseline level of knowledge and proficiency before beginning expensive resident education. Joint professional military education institutions and intermediate and senior service colleges which draw students from all services and varied experiences could benefit tremendously from this kind of application, as could institutions involved in multinational educational programs.

Another technological contribution to joint training is focused on the U.S. Special Operations Command, which has the task of providing special operations forces (SOF) professional military education to more than forty thousand personnel serving around the world with unified commands. Recently the Joint Special Operations Forces Institute began developing a program for a series of fully interactive multimedia courses, initially delivered on CD–ROM.

Various technologies can be grouped under the rubric of distance learning, broadly defined as instruction without the physical presence of a teacher, from traditional correspondence courses to audio and video conferencing. Much of the interest in this area involves using the Internet and intranets to deliver instruction. Although there are many examples of educational and training uses of the Internet, perhaps the most ambitious is an effort by the governors of 18 western states to use the Internet to create a "virtual university"—the Western Governors University.

Distance Learning

Not surprisingly, there is excitement in military education and training circles over distance learning. Using the Internet as a means to deliver courseware allows students to participate from their duty stations or homes. Internet access is becoming increasingly available and inexpensive, and the hardware requirements are minimal; in fact, it is difficult to purchase a personal computer today without a modem or network card (hardware necessary to access networks like the

Figure 3. Distance Learning-Internet

Advantages	Disadvantages
■ Internet access widely available ■ can replicate some collaborative aspects of traditional instruction ■ enhanced records management functions	■ security considerations ■ technology restrictions on size of files decreases multimedia capabilities ■ risk of system overload

Internet). The Internet is becoming a powerful research tool, so courseware which uses it for delivery can also take advantage of its research capabilities. And Internet courseware authoring languages are available that automatically track student performance and provide course directors with formatted, pre-addressed electronic mail messages to encourage student progress.

The most obvious disadvantage of the Internet in delivering military courses is the lack of available, reliable, easy-to-use security.[2] The Defense Information Systems Agency has estimated that there were some 250,000 "attacks" on DOD computer systems in 1995.[3] For the time being, only unclassified (non-sensitive) courses should be considered for Internet delivery. Even with passwords and other measures to secure access to courseware sites, hackers could electronically penetrate any Internet site and damage files or compromise records.

Figure 4. Distance Learning-Conferencing

Advantages	Disadvantages
■ enhanced collaboration and instructor/student interaction	■ access to network node required (or large capital cost)
■ several networks already in place and available	■ requires instructor training
	■ live delivery difficult when target audience spans many time zones

As with all forms of distance learning, interaction among instructors and students is limited on the Internet, although as bandwidths increase and hardware improves, the impact of these limits may be diminished. Furthermore, currently available combinations of bandwidth, computers, and communications hardware and software severely constrain the size of files that can be downloaded quickly—and this means a judicious use of animation, video, and sound in Internet courseware.[4] Studies show that students lose patience when they have to wait more than twenty seconds for the next screen. Since audio and video files can take several minutes to download, for the next few years at least most Internet-delivered instruction will consist primarily of text and still graphics. And finally, some experts believe that the future viability of the Internet itself is at risk as global demand for access increases geometrically each year.

video teleconferencing can provide collaborative aspects missing in other educational technologies

Other distance learning includes audio and teleconferencing, with instructors appearing live or on tape. Among them are the Navy CNET electronic schoolhouse network (CESN), a two-way multipoint secure video and audio network; the government education and training network, a one-way video, two-way audio satellite-based system; and the Army teletraining network, a two-way audio and video structure with connectivity to CESN. Depending on the network and hardware, video teleconferencing can provide collaborative aspects missing in other applications of advanced educational technologies. But unlike CD–ROMs, students must avail themselves of training when it is scheduled rather than when it is personally convenient. This is a problem when the segments of a training audience are separated from each other or from the source of instruction by many time zones. Moreover, unless an audience has access to a network site, the capitalization cost of this form of distance learning can be prohibitive. And instructors must be specially trained in order to understand its capabilities and limitations.

Some problems associated with technology can be overcome by hybrid combinations. For example, interactive multimedia CD–ROMs are being produced with basic courseware that includes Internet connections in the software. This allows students to download updates, research topics in depth, or communicate with course managers. Both performance testing and records management functions can also be accomplished. A related hybrid application will combine Internet-based instruction with Internet-based teleconferencing.

Hybrid Applications

It is possible to replicate collaborative aspects of seminar-based instruction by designing simulations (via CD–ROM) in which computers in essence play other parts. Such collaborative simulations may be expensive to develop but are tremendously effective. The disks can be tailored to allow students to play many roles and can illustrate the effects of actions on virtual players.

Computer smart tutors can also provide some interaction with instructors missing in simple page-turner computer-based instruction. An example of this potential is the S2 trainer, a simulation on CD–ROM developed by Northwestern University to train National Guard battalion intelligence officers.[5] Students working individually on personal computers act as intelligence officers and are provided planning guidance by the battalion commander and operations officer. Moreover, they plan a tactical operation and complete an intelligence estimate. Responses trigger video and audio clips in which subject matter experts suggest alternative approaches and relate relevant

anecdotes, in effect getting an instant, on-line after action review. A similar program for brigade operations officers is also under development.

Successful Applications

Those responsible for joint education and training programs should keep a few simple rules in mind in considering how to best integrate this confusing array of educational technologies.

Figure 5. Hybrid Applications

Advantages	Disadvantages
■ combination of technologies may mitigate disadvantages of single systems ■ less risk of being locked into single technology which may be leapfrogged	■ depending on technologies selected, may be expensive

"If you build it, they will come" works best on baseball diamonds and interstate highways, not in education and training. Often, especially when unanticipated funds becomes available, there is a strong trend to buy hardware, believing that courseware can always be developed later. This can result in impressive technical capabilities with little or no content. Instead, courseware design and planning for necessary hardware should be integrated in a single vision.

"Put this course on a CD–ROM" is a great way to create bad courseware. The strengths of new educational technologies are only realized when courses are designed from the outset to match educational objectives with methods of delivery for target audiences. Although courses often are digitized, the most effective way to capitalize on one's investment is by involving professionals in instructional systems design—the systems approach to training—at the outset. Early participation by those trained in systems design during the definition and analysis phases will help specify the need for programs, clarify education and training objectives, analyze an audience and the learning and resource environment, and develop a strategy to leverage technologies to meet requirements. The old adage—garbage in, garbage out—applies. CD–ROMs may just store more garbage.

Clicking the "next page" button doesn't make a course interactive. Adult learning theories point to the fact that most adults learn better in an active rather than passive environment; they must perform tasks to reinforce the lessons. Well-designed courseware requires the learner to participate frequently in the process and control the pace and sequence of instruction.

The Betamax was better than VHS but where is it now? For other than technical reasons VHS came to dominate the video market. The pace of change, especially that involving computers, makes it not only difficult to predict when hardware or software will be developed but the direction which major changes will take. Large capital investments in a single educational technology are problematic because of the risks of obsolescence.

Whether we recognize it or not, the next generation is here in the lieutenants, junior NCOs, and privates whose familiarity with computers, video games, and other technologies makes them bored with passive learning. Moreover, we are moving toward a military with more electrons but fewer people. Education and training demands will increase, especially in the joint arena, as force size declines. The answer must be career-long learning that leverages appropriate technologies to create and sustain high-impact, cost-effective education and training.

And there is more over the horizon. For example, DOD is examining generation after next collaboration, visualization, and information management technologies, many with applications for education and training. Joint commanders will face the challenge of sifting through technological glitter, looking for those few nuggets that can pay off in a well-trained, ready force. **JFQ**

NOTES

[1] Perhaps the best practical discussion of the differences between education and training is contained in volume 10, "Application to Education," of Air Force Handbook 36-2235, *Information for Designers of Instructional Systems* (November 1, 1993).

[2] The secret Internet protocol router network may resolve some of these concerns as it becomes more widely available.

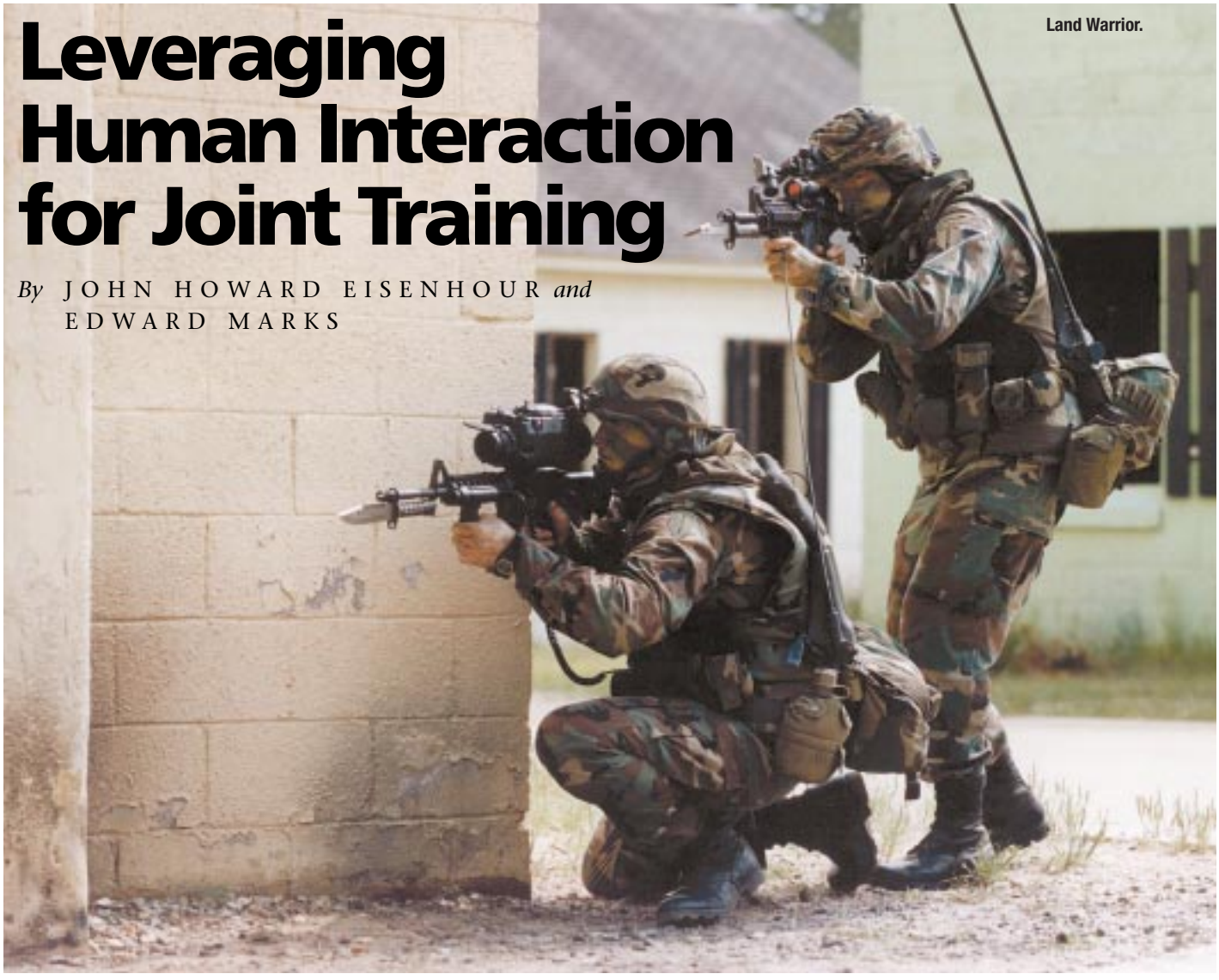
[3] U.S. General Accounting Office, *Information Security: Computer Attacks at Department of Defense Pose Increasing Risks*, report AIMD 96-84 (May 1996).

[4] An excellent (and humorous) example of using the Internet for education and training can be both seen and heard at http://www.sageinteractive.com/overview.html. Note that these files can take several minutes to download.

[5] For a description see http://www.ils.nwu.edu/~vantomme/S2/S2Top.html.

Leveraging Human Interaction for Joint Training

By JOHN HOWARD EISENHOUR *and* EDWARD MARKS



Land Warrior.

U.S. Army

Desert Storm was clearly a battlefield in a classic sense. Similar conflicts may lurk in the near future, and the Armed Forces are quite properly pursuing training programs to deal with them. At the same time, however, challenges will emerge outside the boundaries of the battlefield. These are small scale contingency operations (as noted in the *Report of the Quadrennial Defense Review*) that require capabilities which both differ from and are allied to warfighting. Such actions include "show-of-force operations, interventions, limited strikes, noncombatant evacuation operations, no-fly zone enforcement, peace enforcement, maritime sanctions enforcement, counterterrorism operations, peacekeeping, humanitarian assistance, and disaster relief."

Effective high level training for most small scale contingency operations must differ from conventional training in the same way these operations differ from warfighting. The contrast arises from the need for the joint commander and his staff to operate differently during the planning and conduct of such operations. To varying degrees, depending on the exact nature of the operation, obligations must be discharged by cooperation rather than command. Human interaction between more or less equals is the primary mode of implementation.

John Howard Eisenhour, a former career DOD senior executive, and Ambassador Edward Marks, a retired foreign service officer, frequently participate in joint exercises conducted for senior level staffs.

Striking a Balance

There should be a better balance between pre-scripted events and human interaction in high-level command post exercises. This concern is based on an apparent decision to rely primarily on old fashioned training techniques derived from computer-driven force-on-force models for high-level staffs who are increasingly involved in operations which call for more human interaction with outside elements rather than less.

The current trend toward conducting joint and coalition operations in the real world should lead naturally to emphasis on interaction with other human beings in training sessions simply because more leaders are involved. Moreover, as made clear in the QDR report, the present reality is that we can expect to engage in small scale contingency operations most of the time. Such operations involve an even greater number of actors than major theater wars, as all sorts of friendly national and international officials, non-state players, and members of the private sector gain importance.

Regardless of the number of actors—and thus coordination—involved, the characteristics of modern small scale contingency operations also suggest relatively more human interaction vice pre-programmed action/reaction. A recent comparison of these operations with conventional warfare from a standpoint of information needs showed that the former requires more difficult, softer analysis of far more nonmilitary factors to support consensus decisionmaking and transparency of action. These attributes suggest a great deal of human conversation to secure data and communicate results.

human role playing is necessary to create a valid interactive experience

It is surprising, therefore, that parts of the joint training system involving higher level staff exercises are deemphasizing human interaction in favor of prepared scripts and computer based methods to replicate every action and relationship, both physical and human. This assumes what works for lower level training applies equally to higher levels. Such a shift in technique will not result in the most useful training of higher level staffs for the tasks they are most likely to face.

The Premise

There are limits to both the quality and quantity of human interaction that can be simulated effectively in highly scripted and computer-based training. More critically, by definition exchanges between senior human officials and their respective organizations involve considerable negotiation. The outcome of these conversations is not predetermined or the interactions would be delegated. Moreover, these severe limitations will continue for years—until artificial intelligence develops greater sensitivity to complex human arrangements and relationships.

In many exercises for higher level staffs the lack of attention to forging appropriate working relationships with the range of players in modern small scale contingencies is a major shortcoming in training higher level joint staffs. The only way of correcting this deficiency is to give equal emphasis to other training techniques in exercises. Human interaction must be made a major feature of the experience. This is not a unique idea since some exercises conducted by U.S. Pacific Command (PACOM) have featured human interaction for the past several years.

Classroom and seminar training in negotiating techniques and in human and organizational behavior will help. But adults generally learn better in an active environment than a passive one. They must complete some action to absorb the lesson.

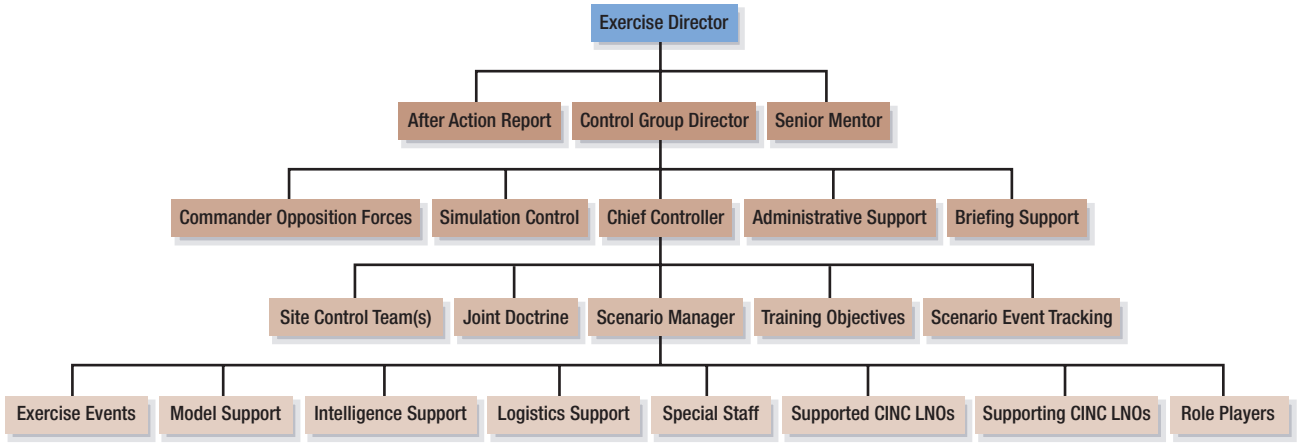
Obviously, computer software should be used in cases when it can provide an appropriate response, and prior preparation of other documents and devices should be maximized; but such actions alone are unlikely to provide a sufficiently realistic challenge for a senior staffer to perform the needed reinforcing tasks. The actions of one party are almost always influenced by those of others if only in terms of the exact sequence of steps to be taken. In a higher headquarters training setting, accommodating this reality translates into adjusting content as well as the timing of stimuli sent by the control group to the training audience. Thus human role playing is necessary to create a valid interactive experience and should be pursued vigorously.

For a better balance between scripted events and human interaction in high-level exercises, it is necessary to focus on the exercise planning process, management structure (the organization of exercise control groups), and the most efficient way of using experts in conjunction with members of the Reserve components for the human interaction portion.

Planning

Successful exercises depend on effective planning in various areas. With regard to human interaction, four key factors will improve the final product. Most important is an early and intense effort to create a truly plausible scenario to engage an audience. Participants in high-level exercises are mature adults who have difficulty relating seriously to weak scenarios regardless of the amount of command direction applied.

Figure 1. Standard Control Group



Good stories are frequently hard to develop because of real world sensitivities, so this step remains a challenge. But scenario preparation is as essential as defining training objectives and, in an effort to maintain plausibility, it may be necessary to slight a desirable objective occasionally. Keeping a training audience intellectually involved in a scenario is especially important when it comes to the participation of senior officers whose active engagement has a critical impact on how an exercise is handled by succeeding levels.

The next important planning action is recruiting real experts to organize and conduct the human interaction with a training audience. The choice of people should be scenario-dependent, and they should be drawn from among government officials, consultants, and others depending on available funding and security requirements. This use of government officials and specialists from other sectors can be economical because their participation can often be obtained for the price of their travel and expenses. The key is making arrangements for expert participation well ahead of time, before their supervisors determine that they are too critical to be released. The best approach is to identify individuals with the appropriate background and request them by name rather than tasking organizations for general assistance.

Another issue is avoiding overplanning the details of the final stages of the exercise. While advance preparation of documentation is important, it must be recalled that details of the later steps are largely determined by precise audience actions in the early stages. Thus, except for timeliness in completing the process and baseline data, the final challenges are best constructed on the spot based on the scenario as it has developed.

Finally, high-level command post exercises should not be linked directly to field training exercises of any type. Because of the funding for field training, troop availability, and safety requirements, planning at that level must be carried out far in advance. These prior solutions constrain thinking by a training audience to the extent that related command post exercises are not taken seriously.

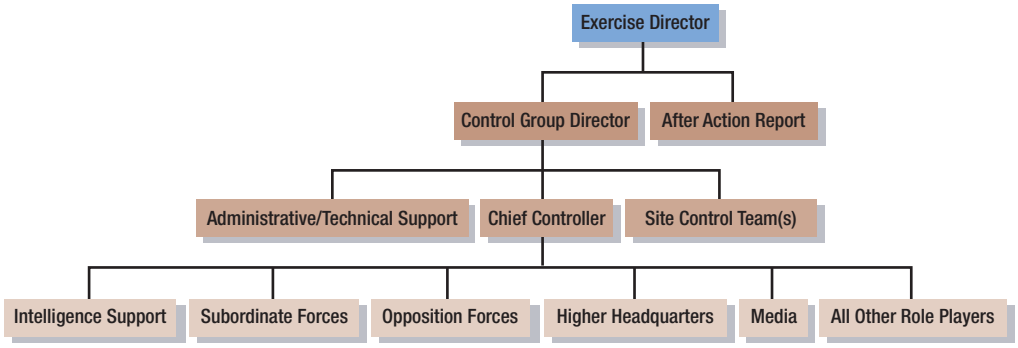
Control Groups

The common title of this entity—a joint or combined exercise control group—is unfortunate. The mission of the control group should be to wrap a training audience in the environment in which it is supposedly operating according to the scenario. The cocoon analogy is perhaps the most apt.

CJCS Memorandum 3500.03 (June 1, 1996) prescribes a particular structure for exercise control groups (figure 1). This hierarchical organization, with emphasis on control rather than production of training challenges, should be replaced by a simple, relatively flat structure (figure 2).

But duplicating all the impulses that would impact trainees in a real situation is impossible. Nevertheless, if the control group is organized along functional lines based on an assessment of all elements of the environment faced in that scenario, a reasonable replication of the types of issues that would arise can be created. Some aspects—such as the next higher headquarters,

Figure 2. Alternative Control Group



subordinate forces, and the media—will always be present, while others may be either major or minor players depending on the nature of the problems at hand. The important point is that the organization and content of the control group should be designed to support the specific scenario rather than some standard structure outlined in CJCS Memorandum 3500.03.

the control group should be designed to support the specific scenario

One example of the impact of the standard structure was the requirement in a recent PACOM exercise to have a distinct opposition force commander organization with separate computer simulation equipment during an exercise focused on humanitarian assistance operations. Given that there was a large intelligence organization capable of acting as an enemy in cases where hostile activity was relevant, the need for an opposition force group was questionable. And during the planning, the very existence of that group led to demands to add more such activity to the scenario.

In sum, exercise control groups should be designed around the various functions that will influence the problem faced by a training audience rather than around organizations represented in the exercise, computer equipment used to simulate certain aspects of an exercise, doctrine, briefing requirements, or other technical considerations, all of which have prominent places in the standard structure. Not only is that structure extraordinarily expensive but it can lead to distortion of the problems to be projected to a training audience.

Control groups should not be regarded as military organizations which need a great deal of formal internal management. They are relatively small, assembled from disparate bodies for short periods, and comprised of military and civilian personnel of all ranks and stations. Such a range of people will do their best when grouped around a task rather than an organization intended for other purposes. To be efficient they must be decentralized and minimize formal review procedures.

Tailoring the organization of a control group to the story to be projected rather than to the notion of control over a training audience creates an entirely different atmosphere within the control apparatus. Its focus is on painting the correct story in a rich, efficient way. Coordination between groups develops quickly, and many additional challenges for a training audience can be prepared based on the details of the group's performance as the exercise progresses. One or two controllers whose focus is the overall conduct of the exercise and communication with the client training audience and higher authorities can ensure that the control group's activities fit overall objectives.

Experts

When properly organized, real experts assisted by Reservists (especially those with civil affairs and similar experience) can identify an enormous number of scenario-relevant challenges that can be transmitted to a training audience. Many will be derived from the preplanned actions; that is, they will emerge from the moves made by the training audience in response to challenges planned in advance. Exercise managers can then choose which to pursue based on the demonstrated needs of a training audience.

This interactive process can add dramatically to the intensity, breadth, and educational value of exercises for a training audience. That audience

Desert Punch.

U.S. Navy (Kurtis Cantiberos)

normally includes people who will be subject to different impulses from the control group because of their positions on the staff. This would be the case in the real world since each staff section concentrates on its relationships with different internal and external actors.

Thus the control group should make the exercise valuable to individual trainees and not just to a training audience as a whole. Moreover, as a decentralized world, exercises must use e-mail, phones, and face-to-face meetings more than formal messages and orders sent to the central control points. This means a greater level of stimulation from the control group is tailored to the specific interests of the individual trainee or staff section.

While it is optimal to have a large cadre of real experts in the control group to provide such interaction, the cost is prohibitive. Experience in recent PACOM exercises demonstrated some ways to maximize the use of experts:

- Recruit people by name well in advance based on their special expertise in scenario areas. For example, use a country desk officer from the Department of State to direct the play of the role of ambassador and the host country in a target country and use members of the media and nongovernmental organizations to simulate their unique roles.
- Organize portions of the control group around experts, assigning less highly qualified Reservists and others to committees chaired by such people.
- Assign responsibility for broad segments of the scenario to each committee, leaving it up to the expert in charge to determine which assigned roles will be played and the best methods given the capabilities of the people assigned. Examples include grouping together all external national and international policy functions or having one committee handle all regional actors depending on the sources of action according to the scenario. Some groupings, such as next higher headquarters and subordinate forces, should always be present.
- Encourage maximum coordination among committees and reassign supporting personnel to other committees as the scenario develops and needs change.
- Insist that control group personnel strictly follow simple rules aimed at maintaining transparency and proper roles when conducting human interaction with a training audience.
- Rely on the expert committee chairs to schedule and manage the work of others assigned to their committees based on the needs of the subgroup.

■ To keep everyone together, stop work and conduct a detailed oral review on the status of the scenario for control group personnel in direct human contact with a training audience at least twice a day.

Doctrine

One fear over human interaction in high level exercises is that solutions negotiated between role players and trainees will violate doctrine or some policy, either because of trainee inexperience or a different agenda on the part of role players, especially those representing other organizations or disciplines. This concern is often dealt with by pre-scripting responses, whether placed in the computer or not. Exercise designers see the reduced reality of this style of higher staff training as the price of correctness. Thus while a one-day seminar game with a small group of senior officers is often frank and inventive, larger scale exercises may not have such virtues.

U.S. Air Force (Chris Steffen)

Roving Sands '97.

This concern is unjustified because senior commanders favor challenging training and do not want mistake-free experiences for their staffs. The problems that normally confront these staffs are not lofty matters of national strategy nor issues acutely influenced by doctrine. Instead they tend to be concerned with proper procedure and bureaucratic prerogatives. Mistakes that may be made concerning such matters are not the focus of seasoned commanders who are concentrating on mission definition and accomplishment.

While warfighting scenarios are internally complicated, small scale contingency operations are usually externally complex because of their diverse casts of military and nonmilitary characters. The more involved a small scale contingency becomes—as in military operations other than war or complex emergencies—the more human interaction with outside agencies is required.

In such cases security concerns—the primary responsibility of military commanders—must be coordinated with priorities such as humanitarian assistance, refugee management, reestablishing government, human rights, food, etc., that are largely the responsibilities of U.N. agencies or non-governmental organizations. Moreover, the overall mandate for an operation often will be a result of international negotiations, with all the ambiguity common to such agreements. In addition, each actor involved—including the military component—will have marching orders from its respective governing authority. In such instances success will only be achieved by paying constant attention to operational transparency and cooperation—to "herding the ducks along."

Training exercises, especially for senior staff, must reflect this operational reality and also include a large dose of problem solving. Less reliance on traditional pre-scripted, computer-based training techniques is appropriate. The role of doctrine in such problem solving is less important. Plausible, challenging scenarios, efficient and flexible control groups, and well-conducted human interaction can help prepare higher headquarters staffs to deal with likely developments in the future. **JFQ**

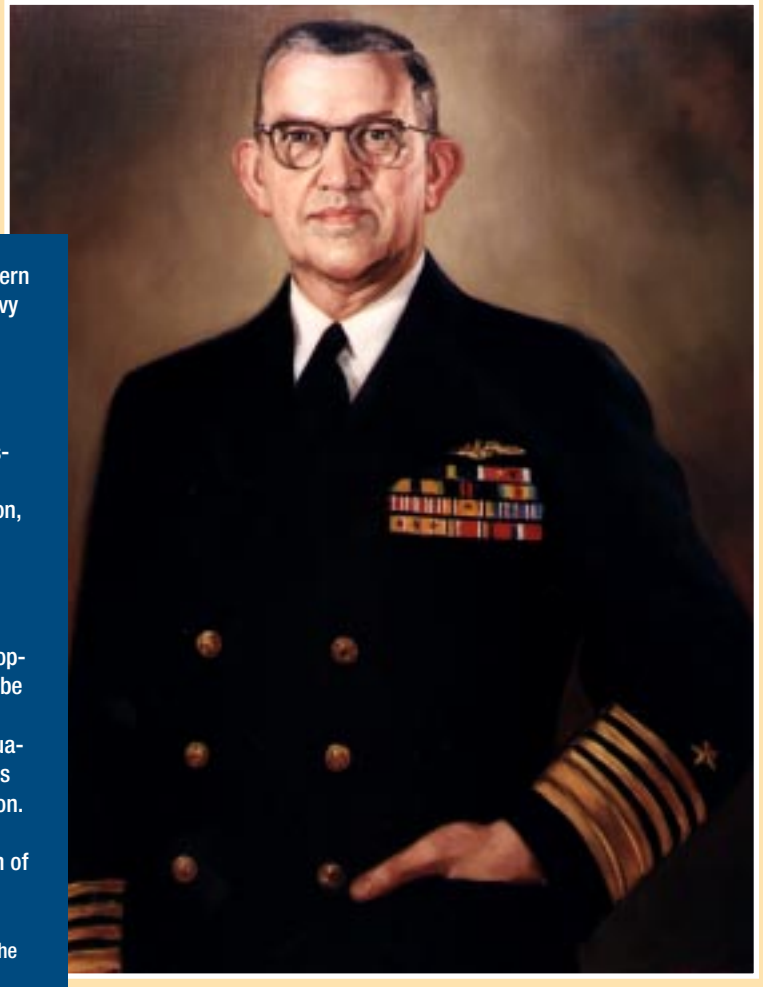
Admiral Louis Emil Denfeld

(1891–1972)

Chief of Naval Operations

VITA

Born in Westborough, Massachusetts; graduated from Naval Academy (1912); commanded *USS McCall* (1919); served aboard S–24 submarine (1923–24); commanded Destroyer Division 11 (1935–37); aide to Chief of Naval Operations (1939); commanded Destroyer Division 18, then Destroyer Squadron 1 (1939–41); served on staff of commander, Atlantic Fleet Support Force (1941); assistant chief, Bureau of Navigation (1942); led Battleship Division 9 (1945); appointed chief, Bureau of Personnel (1945); commanded Pacific Fleet and all U.S. forces in the area (1947); appointed Chief of Naval Operations (1947); detached from duty by the Secretary of the Navy (1949) and retired (1950); died in Westborough, Massachusetts.



Naval Historical Center

Portrait by Alicia Rhett.

The entire Navy . . . is gravely concerned whether it will have modern weapons, in quality and quantity, to do the job expected of the Navy at the outbreak of a future war. We have real misgivings over the reductions that are taking place in the Navy today. . . . It is not so much the reduction in congressional appropriations that worry us. . . . Our concern is with the arbitrary reductions that impair, or even eliminate, essential naval functions. It is not so much a question of too little appropriated money, but how we are allowed to invest that money. . . . Limitations are imposed without consultation, and without understanding of the Navy's responsibility in defense of our maritime nation.

I am an advocate of airpower. . . . I am also a proponent of strategic air warfare.

There has been no objection raised by the Navy to the development of the B–36 to the point where its value as a weapon might be thoroughly evaluated. . . . However, it is illogical, damaging, and dangerous to proceed directly to mass procurement without evaluation to the extent that the Army and Navy may be starved for funds and our strategic concept of war frozen about an uncertain weapon.

The procedure leading up to the cancellation of the carrier *United States* is another exemplification of the improper operation of unification.

—Statement by Louis E. Denfeld before the House Armed Services Committee (October 1949)

Organization

OSD AND THE JOINT STAFF

A report issued in May 1997 on reorganizing the Office of the Secretary of Defense (OSD) contained a number of findings bearing on the relationship between OSD and the Joint Staff. The report, *The Office of the Secretary of Defense: Creating a New Organization for a New Era*, which was prepared by Hicks and Associates, has been provided to Congress. Its recommendations on OSD organization call for creating a position of assistant secretary for intelligence and realigning the functions of a new assistant secretary for command, control, and communications beneath the Under Secretary of Defense for Acquisition. Among its notable recommendations is that the primary role of OSD is "to lead, not to do." Moreover, the report indicates that:

- *OSD is a staff and advisory component, not an operating component*
- *tasks and activities involving resource and program management should be assigned to operating components*
- *assignment of resource and program management responsibilities within OSD should be regarded as a last and temporary resort.*

The following particulars on OSD and the Joint Staff are based on the report's executive summary.

Centralization of authority within OSD and strengthening joint structures are perhaps the most significant trends in defense organization since 1947. Both trends share the common objective of improving unity of effort and reducing the relative autonomy of the military departments. Today there are two key staffs in the higher headquarters of the defense establishment. And while OSD and its subordinate elements are under pressure to reduce in size, some joint structures are being encouraged to expand.

The need to better define roles, functions, and relations between OSD and the Joint Staff is an urgent issue to be considered by the Secretary of Defense and the Chairman. Specifically, how can the two staffs work together more effectively without compromising their respective roles, how can management processes be coordinated for greater efficiency, and how can the potential for unnecessary duplication be reduced?

Despite existing positive working relationships between senior civilian officials and military officers the institutional links between OSD and the Joint Staff are not well defined. The governing directive is outdated and most officials are unable to define their relationships in other than personal terms. Significant concern also was voiced over the roles of OSD and the Joint Staff in areas such as resource allocation, operational and contingency planning, and requirements and acquisition. In sum, this lack of definition denies DOD the benefits of synergy between its two chief staffs.

Several causes are identified for this problem. First, the role of the Joint Staff appears to be better defined after passage of the Goldwater-Nichols Act, though it is still evolving; in contrast, the OSD role is less so. Moreover, some remnants of older patterns of behavior on the part of Joint Staff remain (such as the desire to work through military disagreements behind closed doors) and some civilian officials cling to outmoded concepts that erect barriers between civilian and military activities. Basic tensions embedded in civil-military relations also are present.

This report is only intended to initiate an analysis that would be necessary to compare the organizational capabilities of each staff, their respective management processes, and their subordinate elements. Such an analysis is required to inform decisions on areas of duplication, personnel requirements, opportunities for closer coordination, and the goals for organizational reform. Given the sequential attention paid to joint structures in the mid-1980s, and the closer attention to OSD in the late 1990s, the report points out that a more holistic and coordinated development of civilian and military staff capabilities in the future would constitute a significant breakthrough.

The definition of the desired OSD/Joint Staff relationship can only be initiated by dialogue among the Secretary and Deputy Secretary and the Chairman and Vice Chairman. The potential for dialogue is not to solve a major problem but rather to clarify relations between OSD and the Joint Staff in the post-Goldwater-Nichols era. The objectives of this process are to attain at a new sense of the OSD role as well as to promote greater unity of effort and maximum efficiency.

Top civilian and military leaders should start that dialogue on the key principles which govern OSD/Joint Staff relations, identify objectives for cooperation, and pursue opportunities for greater efficiency. Among the potential principles mentioned are the following:

- Both staffs work for the Secretary of Defense—OSD forms his civilian staff while the Chairman, the Joint Chiefs, and the Joint Staff comprise his military staff.
- Related management processes should be mutually reinforcing and, where possible, integrated into a single headquarters process.
- Activities subordinate to each staff should be mutually supporting and, where possible, consolidated.

To address the above issues, the report proposes that the Secretary and Chairman establish a working group to develop detailed recommendations and update relevant directives. Finally, the report indicates that the effort to implement its recommendations on reorganization would require "a sustained commitment of two to three years." **JFQ**

Lessons Learned

JOINT CENTER

The Joint Center for Lessons Learned (JCLL) has been expanded to include an operational branch at Fort Monroe. To make the joint universal lessons learned system (JULLS) more friendly to its users, the center has begun the transfer of the master JULLS database from the Joint Staff to the Joint Warfighting Center. This move was highlighted by publication of the first *Joint Center for Lessons Learned Bulletin*. It included articles on the JULLS database and its relationship to CJCS commended training issues and the universal joint task list (UJTL) operational level tasks. The bulletin also had a "Golden Nuggets" section with significant JULLS submitted during 1995. The next issue is scheduled to be published in autumn 1997.

JCLL has been working with the combatant commanders to execute a quality review of the current JULLS database to refine existing information and archive outdated and irrelevant JULLS. The JULLS database will be limited to a compilation of lessons learned submitted after August 1, 1990, plus 373 lessons from Just Cause (Panama 1989–90). The initial step in this project was to send the existing JULLS database to the CINCs responsible for their submission in order to determine which lessons should be archived. JULLS returned by CINCs will be put in the master database after being

linked to UJTL and categorized as doctrine, organization, training, material, leadership development, or personnel in nature. These links are an innovative approach to administering the database and were outlined by the Joint Staff in February 1997.

The key objectives of this effort are:

- Archive lessons learned which are no longer relevant to future operations or have already been incorporated. These selected JULLS will no longer be distributed to CINCs but will be placed in a separate database for researchers seeking historic information.
- Link all remaining lessons learned with UJTL using JULLS software to help military planners review lessons in the context of a given mission task.
- Remedial action project lessons will not be archived, but rather maintained in the active database until resolved within this program.

After refining the database it will be made available via SIPRNET. Research on the most efficient software with which to interface the database remains underway. The system is slated to be ready by the second quarter of 1998.

Plans for the JCLL master database include using the system as a repository and reference source for the results of the current *Joint Vision 2010* assessment. This will assist in synthesizing assessment results and facilitate *JV 2010* coordinating authorities, the services, and CINCs in their assessment/experimentation efforts.

Anyone interested in the history and organization of the Joint Warfighting Center is invited to visit its home page on the Internet which also serves as an excellent search engine with hypertext links to all lessons learned databases and points of contact (jcll@jwfc.js.mil).

For copies of the bulletin or details on the Joint Center for Lessons Learned, contact CDR Pat Clark, USN, at (757) 726–6158 / DSN 680–6158. **JFQ**

History

THE JOINT BOOKSHELF

Two new monographs have been released by the Joint History Office. *Operation Urgent Fury* by Ronald H. Cole is an account of planning for and execution of operations on Grenada in 1983. It focuses on the involvement of the Chairman, Joint Chiefs, and Joint Staff in planning and directing such operations. It also discusses the combat operations incident to the evacuation of noncombatants after the October 12, 1983 coup that removed the Grenadian leader, Maurice Bishop, and deals with events up to the termination of operations on November 2. This monograph, based on research in Joint Staff files and interviews, contains an index and maps.

The other volume, which was written by Robert T. Cossaboom of Air Mobility Command, is entitled *The Joint Contact Team: Contacts with Former Soviet Republics and Warsaw Pact Nations, 1992–1994*. It describes the assistance provided by the Armed Forces to states in central and east Europe after the collapse of communist regimes. The monograph details the activities of the Joint Contact Team Program which was created for this mission by U.S. European Command.

Both titles are available by writing to: Director for Joint History, Office of the Chairman of the Joint Chiefs of Staff, Room 1B707, The Pentagon, Washington, D.C. 20318–9999. **JFQ**

INSTITUTE FOR NATIONAL STRATEGIC STUDIES
NATIONAL DEFENSE UNIVERSITY

1997–1998
Symposia

TOPICAL SYMPOSIUM
"U.S. Engagement Policy: Options for the Future"
October 7–8, 1997

PACIFIC SYMPOSIUM
February 10–11, 1998

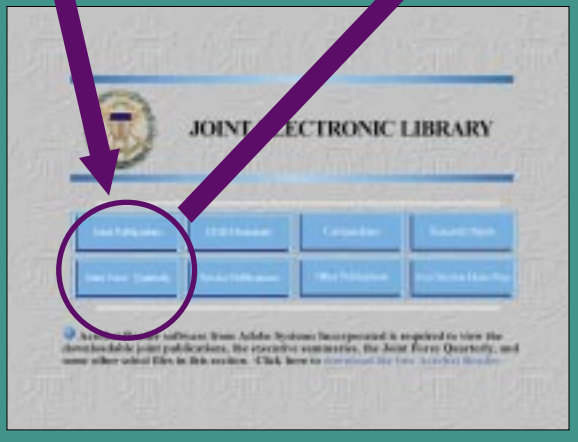
EUROPEAN SYMPOSIUM
May 5–6, 1998

For further information and registration material on the above events, please contact:
National Defense University
ATTN: NDU–NSS–SY
300 Fifth Avenue (Bldg. 62)
Fort Lesley J. McNair
Washington, D.C. 20319–5066
Telephone: (202) 685–3857 / DSN 325–3857
Fax: (202) 685–3866 / DSN 325–3866
Internet: grahamj@ndu.edu

Information on symposia is available via the National Defense University World Wide Web server. Access by addressing **http://www.ndu.edu.** Symposia programs and registration material are normally posted on the server 90 days prior to events.

Look for *JFQ* on the Joint Doctrine Web Site

http://www.dtic.mil/doctrine



For more information about the Joint Doctrine Web Site, contact the Joint Doctrine Division, Operational Plans and Interoperability Directorate (J-7), at (703) 614–6469 / DSN 224–6469.

A NEW PARADIGM FOR THE ARMY

A Review Essay by
F.G. HOFFMAN

Breaking the Phalanx:
A New Design for Landpower in the 21st Century
by Douglas A. Macgregor
Foreword by Donald Kagan
Westport, Connecticut: Praeger, 1997.
283 pp. $65.00
[ISBN 0–275–95793–4]

Defeat of the Greek phalanx by the Romans at Cynoscephalae in 197 B.C. provides the metaphor for thinking about restructuring the U.S. Army in this new book by Douglas Macgregor. As the debate over the revolution in military affairs (RMA) evolves, the assumption that airpower and precision munitions are the predominant instruments of power increases. Given the agenda of the recent Quadrennial Defense Review, many observers believe landpower will be the loser on the technocentric battlefield with its long range strike systems, robots, unmanned aerial vehicles, and sensors. *Breaking the Phalanx* sets out to challenge that assumption. It criticizes both outmoded concepts and force structure and proposes transforming the Army into a 21st century legion to meet the strategic requirements for landpower dominance.

Macgregor argues that the Army must undergo a dramatic change (break its own phalanx) by adjusting to the emerging patterns of information warfare and the initial stages of a revolution in military affairs. He chides "the Army's passion for centralization" and a proclivity for conducting war "by remote control." Such restrictions create severe disadvantages in the information age and are incompatible with successful efforts by the private sector to reengineer in the face of competition and new technology. As he states:

Trained and organized for a style of war that has changed very little since World War II, current Army organizational structures will limit the control and exploitation of superior military technology and human potential in future operations. Attempts to graft large scale technological change onto old thinking and old structures can only be a temporary expedient; new capabilities demand their own organizations and operational culture.

To satisfy the demands put on the Army, Macgregor emphasizes the need for ground forces to be prepared to perform the tasks Caesar assigned to his legions—to win wars, restore order, and preserve a stable and prosperous peace. He disparages the idea that landpower is being eclipsed by a revolution in military affairs. It is "not a question as to whether landpower is essential to U.S. strategic dominance, but rather how landpower should be reorganized" to operate jointly with both airpower and seapower to maintain this dominance. To do so, the Army must encourage initiative, develop more flexible and adaptive fighting formations, and field fast-paced combined arms assets as JTF components.

The author spurns the traditional focus of Army force structure, the division, and advocates a new paradigm for executing dominant maneuver. This would involve a transition from industrial age warfighting to prepare for conflicts in which chaos is supreme, weapons of mass destruction are omnipresent, and dominance of the battlespace is paramount.

To meet these challenges, Macgregor poses criteria for force design:

- smaller in size and more numerous in quantity
- warfighting functions at lowest level to generate "radical autonomy"
- modular structure for adaptation and task organizing
- operational and tactical mobility to facilitate dispersion and concentrate effects
- sustainable for extended periods.

This information-age force will be comprised of combat groups. The author spells out four types organized around a C^4I battalion under a brigadier general, with 4,000 to 5,000 soldiers. The *heavy combat* group is his force of decision and has three combined arms battalions with armor and mechanized infantry units of equal size—132 tanks in the former and 132 armored vehicles in the latter. The *heavy recon strike* group is intended for close and deep maneuver; with 126 tanks, 153 armored vehicles, and organic air attack assets, it is similar to the heavy combat group but could operate ahead of such units, shaping the battlespace with Army and Air Force deep battle systems. The *light recon strike* group has 126 armored gun systems and 160 light armored vehicles and can be air lifted to conduct maneuver and contingency operations as well as MOOTW. Last, the *airborne-air assault* group is designed for forced entry and economy of force operations and MOOTW; highly mobile, it has three 700-man infantry battalions with organic air attack assets. Elite light infantry elements are augmented by helicopter assault battalions drawn from a corps level general support aviation group.

Macgregor recognizes that reorganizing the Army into these groups is not revolutionary but would spawn change at the start of a new RMA. He supports Army programmatic efforts to move towards Force XXI, yet stresses the need to push aggressively for training, educational, doctrinal, and organizational changes that will realize the full potential of the information age.

In addition to restructuring the 10-division Army into 26 combat groups, the author aligns the geographical balance of land forces. He foresees three heavy combat groups and one airborne-air assault group in Europe and one heavy recon strike group in Korea. He allocates a similar unit to maintain our presence in Kuwait and bolster deterrent capabilities in the region. The net effect of his force laydown is a reduction in forward deployment by almost 50,000 soldiers.

As some forces return home, two powerful corps are provided to U.S. Atlantic Command for power projection operations outside the continental United States. A flexible deterrent corps of 6 or 7 airborne-air assault and 2 light recon-strike groups is also created, and a decisive force corps composed of 10 to 12 heavy combat groups supported by both rocket artillery and aviation strike assets provides combatant CINCs with a force of decision.

Despite a balanced approach regarding technology, Macgregor goes overboard with advice on how to pay for enhanced landpower. He finds that the proliferation of unmanned autonomous vehicles, cruise missiles, and quiet diesel boats raises serious questions about the vitality of new Navy concepts for littoral warfare. Noting that naval forces are ideal targets for weapons of mass destruction while conducting forced entry, he concludes that forces that rely upon large industrial age platforms like carriers have to depend on a vast array of costly defensive systems. In addition to being risky and capital-intensive, they are not as useful a deterrent as land forces because "forces that must position hundreds of miles away . . . are not likely to be a credible deterrent."

F.G. Hoffman is the author of *Decisive Force: The New American Way of War.*

U.S. Army

This assessment is based on a profound and pessimistic assertion that strikes at the heart of our foreign policy and defense policy—the ability to influence events far from home. "The realities of the RMA," the author asserts, "reinforce America's need for regional partners who can provide access without resort to potentially costly forced entry operations." Without the Army in regions of vital interest, U.S. forces are unlikely to gain access in future conflicts because of threats from weapons of mass destruction and cruise missiles against vulnerable, industrial age Navy platforms. "In contrast," Macgregor continues, "dispersed, highly mobile ground forces present poor targets for these weapons and land based aviation can operate from protected locations beyond the range of these weapons." Based exclusively on an analysis of Southwest Asia, he concludes that joint operations that are not dependent primarily on sea-based forces have a greater chance of success. "Critical port and airfield facilities can then be isolated, attacked, and seized from the land more cheaply, efficiently, and at less risk to American lives than from the sea."

With such a limited view of the potential for RMA applications at sea, readers should not be surprised that the author identifies naval programs as the largesse to pay for defense investments in the next millennium. Among current defense programs regarded as weak in terms of their strategic justification, Macgregor identifies $150 billion in potential savings. Some $120 billion comes from the Navy and $4 billion from disestablishing National Guard divisions. The Navy F/A–18 program is the biggest target, but aircraft carriers, destroyers, and assault amphibians are also sacrificed. Had the author not focused exclusively on landpower applications of RMA he might have recognized that the same technologies and similar organizational arrangements apply in the other services and offer greater mobility and force protection. Apparently only the Army and potential enemies are positioned to reap the RMA whirlwind.

The author has an excellent grasp of history but has done only cursory research, much of it drawn from press accounts. His experience provides a wealth of background for assessing future landpower capabilities but clearly runs short when evaluating a full mix of operational capabilities. Accordingly, the capabilities of the other service are sometimes misstated. Cost data is generally adequate save for cases such as the V–22, whose price is exaggerated and mission limited to getting the Marines to the beach. Naval officers will agree that technology proliferation challenges more traditional approaches to sea-based operations. But there are many concepts, experiments, and technology demonstrations that overcome such challenges. Soldiers and marines should not argue over the need for land forces in the next century. In fact, leading combat developers from both services join in support for the continued relevance and strategic flexibility of ground forces.

The weakness of *Breaking the Phalanx* is its lack of a strategic framework or a substantive assessment of national interests to support proposed shifts in resources. The author presents a strong historical argument but no conclusions based on an analytical framework. What is the impact of cutting 50,000 forward deployed troops, and how would such a reduction square with the conclusion that land forces are superior for deterrence? Although Macgregor's argument for a strong landpower component is conclusive, the lack of a strategic context precludes making serious decisions or tradeoffs in defense planning.

There remains, however, much utility in a work that forcefully argues for a need to temper the current American infatuation with technology. There is a good deal with which to agree, particularly the caution that "military strategy based primarily on ships, planes, and precision-guided missiles forfeits military flexibility and courts strategic irrelevance in the 21st century." Conventional land forces armed with tanks and armored fighting vehicles will not accomplish every future mission. While *Breaking the Phalanx* offers a more agile and adaptive structure for such forces, its combat groups in and of themselves do not fit the bill across the conflict spectrum.

Macgregor makes a compelling case for reorganizing the Army. But his limited familiarity with naval warfare—including new technology and programs that support the description of littoral operations in *Forward . . . From the Sea* or the Marine concept outlined in *Operational Maneuver from the Sea*—undermines his conclusions. Such ideas contribute as much to dominant maneuver and force protection as would a modern legion, albeit with capital investments.

With fewer Americans stationed overseas, U.S. strategic interests dictate a continuing need for rapidly deployable forces able to arrive at points far distant from our shores prepared to fight. That might require operating from sea bases to reduce vulnerabilities and increase maneuver space, but we should not have to operate at the whim of another country. All the land forces in the world are worthless if they cannot be projected ashore and sustained. A nation that cannot create its own opportunities and project power to protect its interests is not a viable global power. JFQ

'L' IS FOR LOGISTICS

A Book Review by
JOSEPH E. MUCKERMAN II

The Big 'L': American Logistics in World War II
An Industrial College of the Armed Forces Study
Edited by Alan L. Gropman
Washington: National Defense University Press, 1997. 447 pp. $28.00
[ISBN 0–16–048668–8]

For every thousand books published on military strategy, one deals with logistics—that is, with the creation and sustainment of military power. This lack of attention is troubling because, as the introduction to *The Big 'L': American Logistics in World War II* reminds us, "The United States used a logistics strategy to build armaments in depth rather than in width." That conflict was won by the Allies because America became the arsenal of democracy. Britain and the Soviet Union held off the Axis powers long enough for the United States to assemble that arsenal and thereby brought vastly superior military potential to bear against Germany and Japan.

The Big 'L' is logistics writ large. The volume opens with an essay detailing the fits and starts of industrial mobilization and goes on to document economic mobilization, the building of the U.S. infrastructure, the lend-lease program (and how it gave us a leg up in the months leading up to Pearl Harbor), and logistics in the European and Pacific theaters—the combat payoff.

One can't read this record of wartime logistics without being impressed, even awed. Yes, mistakes were made, delays occurred, and opportunities were lost because generating the power to wage war takes time. Again and again the refrain from both the European and Pacific theaters was that logistics considerations constrained strategic possibilities and strategic decisions drove logistic requirements. Thus it was and thus it always will be.

But *The Big 'L'* is more than a treatise on wartime logistics. It portrays the development of grand strategy—how the resources of an entire country were marshalled and deployed to achieve national security objectives. The argument is frequently made today that Big 'L'-type logistics are passé. Since the 1980s the chorus has been: "We will never again mobilize on a large scale and, in fact, future wars will be come-as-you-are and off-the-shelf events."

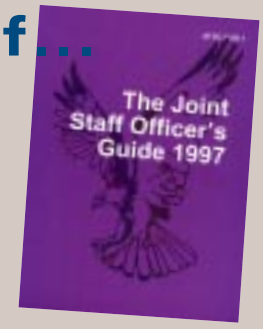
To overcome this ingrained aversion to the study of logistics, the Industrial College of the Armed Forces—which sponsored the symposium that led to this book—should produce a series of studies under the rubric of the Big 'L' on Korea, Vietnam, the Cold War, and the Gulf War. That would yield valuable lessons learned and assist in developing grand strategy for the next century. The authors of this volume on World War II offer a model for examining the balance of ends and means—strategic requirements and logistic capabilities—for succeeding generations of war college students. If we pay proper attention to the Big 'L' there will not be a strategy-resource gap and our national security will be assured. JFQ

Anzio, March 1944.

Naval Historical Center

Colonel Joseph E. Muckerman II, USA (Ret.), served as director of emergency planning in the Office of the Secretary of Defense.

For your reference shelf . . .



A new edition of Armed Forces Staff College Publication 1, *The Joint Staff Officer's Guide 1997*, is now available. This illustrated 450-page volume provides a comprehensive summary of details on joint planning and execution that cannot be found elsewhere. It presents an overview of the players, processes, and procedures used in the joint arena as well as a wide range of reference material of interest to joint staffs as well as officers in the field and fleet.

AFSC Pub 1 can be found on the Internet (at www.afsc.edu) and also can be accessed through the Joint Electronic Library. Copies are for sale from the Superintendent of Documents at $38.00 each by writing to: U.S. Government Printing Office, Washington, D.C. 20402, or phoning (202) 512–1800 [GPO stock no. 008–020–01422–2]. In addition, it may be purchased from the Defense Automated Printing Service (DAPS) for $14.00 by contacting Don Mruk in San Diego, California, at (619) 556–7187/DSN 526–7187 or Everett Morton in Norfolk, Virginia, at (757) 444–7724/DSN 464–7724 (extension 19). JFQ

THE GREAT WAR AND THE BIRTH OF ARMORED WARFARE

A Book Review by
WILLIAMSON MURRAY

Men, Ideas, Tanks: British Military Thought and Armoured Forces, 1903–1939
by J.P. Harris
Manchester University Press: Manchester, 1995.
342 pp. $79.95
[ISBN 0–7190–3762–X]

Since military institutions so rarely get to practice their profession, military history provides the uncertain and ambiguous laboratory for thinking about the business of preparing for war. How uncertain and ambiguous that laboratory can be is suggested by the constant and steady expansion of our knowledge of events even as far back as World Wars I and II. In fact one could argue with considerable justification that it has only been in the last two decades that military historians really have begun to unravel what happened in the final years of World War I.

Worse for lay readers as they attempt to make sense of the welter of opinions, there is also the difficulty of periodization—that the Great War began in 1914 and ended in 1918, the interwar period began in 1919 and ended in 1939, and so forth. Yet the generals of 1919 did not suddenly recognize that their institutions had entered a wholly new period with the ending of World War I and that they would thereafter have to innovate and prepare for the next war in an austere climate. In fact, to fully grasp the evolution of armored warfare one must look at the period from the early 1900s to 1939 in its entirety and place the events of peacetime and war in a single developmental framework.

Finally, in dealing with armored warfare, particularly in Great Britain, there is a third and equally substantial obstacle. The shadows cast by both Basil H. Liddell Hart and J.F.C. Fuller still dominate the landscape, distorting as much as informing the debate.

J.P. Harris, senior lecturer in the Department of War Studies at the Royal Military College, Sandhurst, has written a splendid study that has linked diverse threads to place the development of armored warfare in the British army in a coherent and intelligent framework. And that framework examines the problem of the tank from inception through to the outbreak of World War II. This is an important study because it examines the institutional and intellectual processes of adaptation and innovation in war as well as peacetime. What makes *Men, Ideas, Tanks: British Military Thought and Armoured Forces, 1903–1939* particularly useful for Americans is that it is a story of initially successful innovation under the pressure of war, followed by growing failures that would exercise a baneful influence over British efforts during World War II. Harris is never afraid to express a strong opinion; in my view that is a great strength, though there are moments when one may well disagree with aspects of his argument. But overall the research is impeccable, criticisms of the historical wisdom generally on target, and the effect of his thesis clear, incisive, and at times brilliant. In fact, Harris has combined a solid grasp of secondary sources with detailed and careful research in British army records.

The traditional view of armored warfare development in Britain has depicted a few lonely, brilliant individuals—Liddell Hart and Fuller in particular—leading the charge against troglodytes in the War Office—first to develop the tank and thereby to avoid the terrible killing battles of 1917 and 1918 and then to innovate during the interwar period to prepare for the next war. Thereafter the struggle resumed with Fuller, Liddell Hart, and their allies fighting a valiant and losing battle against entrenched orthodoxy. Much of that traditional picture was already in tatters before Harris arrived on the field. But he places armored development within a general framework and combines a number of problems which historians have examined only in the specific.

The book shows that the tank got enthusiastic support from Douglas Haig from the first. Moreover, Harris indicates the considerable difficulty the British experienced in trying to fit a new weapons system into an increasingly complex tactical framework. It was not clear how the tank could help British infantry and artillery break the deadlock until the last summer of the war. Finally, tank advocates, particularly Fuller, may have hindered as much as helped initial employment of armored fighting vehicles. Harris demolishes Fuller's claim that his "Plan 1919" represented a revolutionary approach to warfare; in fact Harris emphasizes that there was "gross overstatement" and a general unwillingness in Fuller's arguments to recognize what had happened during the German spring offensive of 1918. Haig at least had the sense to realize that no matter how useful the tank might prove, they "could only succeed as part of a force 'of all arms in proper combination'"—something Fuller never fully recognized.

After the war the debate between armor advocates and the army leadership grew ever more hostile. By and large Liddell Hart and Fuller won exchanges in the popular press and the literature of defense analysis through their pens and arguments. But in fact their overwhelming emphasis on the tank as a war winner by itself was as distortive as the general failure by the army to address the problems raised by the war. One criticism of *Men, Ideas, Tanks* is that it is probably too kind to an army hierarchy that all too often refused to examine the lessons of the last war with enthusiasm. The first lessons learned committee formed in the British army did not appear until 1932, 12 years after Hans von Seeckt organized some 57 different committees in Germany to study World War I. But the criticism that Harris levels against the military reformers and the damage that they managed to do while inflating their own reputations is right on target.

This is an important book for any officer interested in peacetime innovation. It suggests the dangers ahead—that any advantage in military affairs is a wasted resource unless it is accompanied by diligent, serious, and honest study of both the past and present. Harris has done a great service by laying out the development of the tank in real rather than imagined parameters. JFQ

Williamson Murray is coeditor of *Military Innovation in the Interwar Period* and *The Making of Strategy: Rulers, States, and War.*

JFQ
welcomes your letters and comments
Fax your correspondence to
(202) 685–4219/DSN 325–4219
or via e-mail to JFQ1@ndu.edu

WAR AND PEACE IN THE NEW WORLD ORDER

A Book Review by
WILLIAM H. LEWIS

Civil Military Operations in the New World
by John T. Fishel
Foreword by Fred C. Woerner
Westport, Connecticut: Praeger, 1997.
269 pp. $65.00
[ISBN 0–275–94797–1]

As many recent military interventions demonstrate, the United States often lacks a clear strategic vision of the political military end state for multinational peace operations. The basic components of national strategy must be involved: ends (objectives), ways (concepts to be applied), and means (resources to be allocated). As John Fishel observes in *Civil Military Operations in the New World*, "More than ever in future operations we need to determine what our political military objectives will be when war is finally terminated." He believes that the principles of war should be applied to peace operations of the complexity and variety that have claimed U.S. involvement in the post-Cold War world.

At the heart of the Fishel thesis is the indispensable role that civil affairs—a function largely vested in the Army Reserve—and other combat support and service support capabilities can play in shaping post-conflict political and economic situations. A specialist in the realm of civil military operations (CMO), he provides case studies which support his rigorous look at how CMOs were organized and introduced at each stage of operations in Panama, Kuwait, Northern Iraq, Somalia, and Haiti. Most CMO involvements proved of limited success in shaping post-war environments. Fishel attributes these unsatisfactory outcomes to lack of precision in establishing desired political military end states.

In Panama the United States failed to specify the nature or style of democracy it wanted to succeed Noriega. Planners at the Departments of State and Defense assumed that simply holding free and unfettered elections would prove decisive in entrenching democratic values and traditions. In Desert Storm the National Command Authorities were unclear on the course to follow once Iraqi forces were ejected from Kuwait. While encouraging Shiite and Kurdish dissidence, they wanted to avoid the political fragmentation in Iraq; yet no contingency plan existed to provide emergency aid for civilians caught up in the fighting.

William H. Lewis is professor emeritus at The George Washington University.

U.S. (Larry Lane)

Peace dividend.

Fishel is encouraged by the skill and imagination with which CMO planning was organized at the outset of the Kuwait crisis. However, he concludes that an almost unbridgeable gulf exists between joint force commanders and CMO planners on dealing with war termination. In Panama, Desert Storm, and Provide Comfort, basic CMO doctrine was only partially observed, reflecting failure to properly integrate combat forces and civil affairs specialists.

There are also important lessons for senior policymakers. As Fishel reminds us, the U.S. political leadership expressed great expectations for establishing democratic institutions in Somalia, Haiti, and Bosnia. However, no meaningful guidelines were forthcoming on the nature or type of democratic institutions to foster. Moreover, the end state envisioned by planners did not reflect the political agenda, resulting in a "disconnected policy and strategy between the military and civilian agencies of the U.S. Government."

Civil Military Operations is an invaluable contribution to the growing body of literature on peace operations. One fundamental flaw in the Fishel thesis, however, is his contention that every peace operation must be contemplated within the framework of war termination. U.S. goals may involve rescue/humanitarian assistance (Rwanda), peace monitoring (Western Sahara), separation of rival forces (the Sinai and Bosnia), and peacemaking (Bosnia again). In those cases it would be a stretch to claim that American involvement—in concert with the forces of other nations—was of the traditional imposed-war termination genre. As we have recently witnessed, the justification and purposes for which multinational forces are introduced in crisis situations are varied and complex. Unfortunately, there is no silver bullet in CMO doctrine that addresses all these complexities and organizes the resources to cope with them. JFQ

Cumulative Index (1996–1997)

ISSUES 13–16: CONTRIBUTORS

A'Hearn, Francis W.
The Sisyphus Paradox: Framing the Acquisition Reform Debate, no. 16 (Summer 97), pp. 34–38

Ahrari, M.E.
Riding the Toffler Wave: A Book Review, no. 15 (Spring 97), pp. 141–43

Andre, David J.
Culture and Warfare—Whither Decisive Force: A Book Essay, no. 13 (Autumn 96), pp. 104–08

Barry, Charles L.
Creating a European Security and Defense Identity, no. 15 (Spring 97), pp. 62–69

Belknap, Maggie
The Force-on-Force Model: An Anachronism in the Information Age, no. 15 (Spring 97), pp. 116–19

Bernstein, Alvin H.
The QDR Process—An Alternative View, no. 16 (Summer 97), pp. 20–26

Thucydides and the Teaching of Strategy: A Review Essay, no. 14 (Winter 96–97), pp. 126–27

Bingham, Price T.
On Machine Guns and Precision Engagement, no. 16 (Summer 97), pp. 88–90

Binnendijk, Hans
A Strategic Assessment for the 21st Century, no. 13 (Autumn 96), pp. 67–68

NATO, European Security, and Beyond, no. 15 (Spring 97), pp. 54–56

Blaker, James R.
Overseeing Cross-Service Trade Offs, no. 13 (Autumn 96), pp. 37–40

Brady, Pamela J.
Joint Endeavor—The Role of Civil Affairs, no. 16 (Summer 97), pp. 45–47

Brandt, Linda S.
The Sisyphus Paradox: Framing the Acquisition Reform Debate, no. 16 (Summer 97), pp. 34–38

Builder, Carl H.
Keeping the Strategic Flame, no. 14 (Winter 96–97), pp. 76–84

Casper, Lawrence E.
Knowledge-Based Warfare: A Security Strategy for the Next Century, no. 13 (Autumn 96), pp. 81–89

Castka, Bruce
The National Support Element in Hungary, no. 16 (Summer 97), pp. 48–49

Clawson, Patrick L.
Middle Eastern Military Dynamics: A Book Review, no. 13 (Autumn 96), pp. 111–12

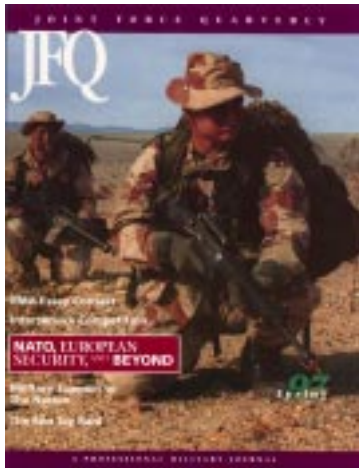
Clay, John S.
The Fifth Service Looks at Doctrine, no. 14 (Winter 96–97), pp. 29–33

Cohen, William S.
Report of the Quadrennial Defense Review, no. 16 (Summer 97), pp. 8–14

Courter, Jim
The QDR Process—An Alternative View, no. 16 (Summer 97), pp. 20–26

Cusick, John J.
In Search of Focused Logistics, no. 15 (Spring 97), pp. 125–27

Davis, Jacquelyn K.
The Looming Alliance Debate over Nuclear Weapons, no. 15 (Spring 97), pp. 80–86



Donley, Michael B.
Prospects for the Military Departments, no. 13 (Autumn 96), pp. 58–62

Drago, Steven R.
Joint Doctrine and Post-Cold War Military Intervention, no. 14 (Winter 96–97), pp. 106–10

Echevarria, Antulio J., II
Dynamic Inter-Dimensionality: A Revolution in Military Theory, no. 15 (Spring 97), pp. 29–36

Eisenhour, John Howard
Leveraging Human Interaction for Joint Training, no. 16 (Summer 97), pp. 109–14

Estes, Howell M., III
Space and Joint Space Doctrine, no. 14 (Winter 96–97), pp. 60–63

Fogleman, Ronald R.
The Air Force and *Joint Vision 2010*, no. 14 (Winter 96–97), pp. 24–28

Fredericks, Brian E.
Information Warfare at the Crossroads, no. 16 (Summer 97), pp. 97–103

Grange, David L.
Forgotten Mission: Military Support to the Nation, no. 15 (Spring 97), pp. 108–15

Graves, Howard D.
Emergence of the Joint Officer, no. 13 (Autumn 96), pp. 53–57

Gumahad, Arsenio T., II
The Profession of Arms in the Information Age, no. 15 (Spring 97), pp. 14–20

Gutmanis, Ivars
Whatever Happened to Defense Industrial Preparedness? no. 16 (Summer 97), pp. 27–33

Habiger, Eugene E.
Strategic Forces for Deterrence, no. 14 (Winter 96–97), pp. 64–69

Halter, Irving L.
Knowledge-Based Warfare: A Security Strategy for the Next Century, no. 13 (Autumn 96), pp. 81–89

Hanauer, Larry
EUCOM and Sub-Saharan Africa, no. 15 (Spring 97), pp. 103–07

Handberg, Robert
Searching for Policy Coherence: The DOD Space Architect as an Experiment, no. 16 (Summer 97), pp. 91–96

Hillen, John
After SFOR—Planning a European-Led Force, no. 15 (Spring 97), pp. 75–79

Hoffman, F.G.
A New Paradigm for the Army: A Review Essay, no. 16 (Summer 97), pp. 119–20

Johnson, Jay L.
The Navy in 2010: A Joint Vision, no. 14 (Winter 96–97), pp. 17–19

55th Signal Company, Combat Camera (Nicholas J. Blair)

Johnson, Rodney L.
Forgotten Mission: Military Support to the Nation, no. 15 (Spring 97), pp. 108–15

Johnson-Freese, Joan
Searching for Policy Coherence: The DOD Space Architect as an Experiment, no. 16 (Summer 97), pp. 91–96

U.S. Navy

Jones, David C.
Past Organizational Problems, no. 13 (Autumn 96), pp. 23–29

Joseph, Robert G.
The Impact of NBC Proliferation on Doctrine and Operations, no. 13 (Autumn 96), pp. 74–80

Joulwan, George A.
Doctrine for Combined Operations, no. 14 (Winter 96–97), pp. 46–49

The New SHAPE of the Atlantic Alliance, no. 15 (Spring 97), pp. 57–61

Kross, Walter
Single Port Management, no. 14 (Winter 96–97), pp. 53–57

Krulak, Charles C.
Doctrine for Joint Force Integration, no. 14 (Winter 96–97), pp. 20–23

Lewis, William H.
War and Peace in the New World Order: A Book Review, no. 16 (Summer 97), pp. 123

Link, Charles D.
21st Century Armed Forces—*Joint Vision 2010*, no. 13 (Autumn 96), pp. 69–73

Locher, James R., III
Taking Stock of Goldwater-Nichols, no. 13 (Autumn 96), pp. 10–16

Lord, Carnes
To Wage a War of Words: A Book Review, no. 13 (Autumn 96), pp. 109–10

Lorenz, F.M.
War Criminals—Testing the Limits of Military Force, no. 16 (Summer 97), pp. 59–65

Lovelace, Douglas C., Jr.
Joint Doctrine Development: Overcoming a Legacy, no. 14 (Winter 96–97), pp. 94–100

Lwin, Michael R.
General Tzu's Army: OPFOR of the Future, no. 15 (Spring 97), pp. 44–49

Marks, Edward
Leveraging Human Interaction for Joint Training, no. 16 (Summer 97), pp. 109–14

McCarroll, Kevin F.
Transition of the Sarajevo Suburbs, no. 16 (Summer 97), pp. 50–53

Messervy-Whiting, Graham
WEU Operational Development, no. 15 (Spring 97), pp. 70–74

Morningstar, James K.
Technologies, Doctrine, and Organization, no. 15 (Spring 97), pp. 37–43

Muckerman, Joseph E., II
'L' Is for Logistics: A Book Review, no. 16 (Summer 97), pp. 121

Murray, Williamson
The Great War and the Birth of Armored Warfare: A Book Review, no. 16 (Summer 97), pp. 122

The 1996 RMA Essay Contest, no. 15 (Spring 97), pp. 6–7

Thinking About Revolutions in Military Affairs, no. 16 (Summer 97), pp. 69–76

Why Training Counts: A Book Review, no. 14 (Winter 96–97), p. 128

National Defense Panel
National Security in the 21st Century: The Challenge of Transformation, no. 16 (Summer 97), pp. 15–19

Nunn, Sam
Future Trends in Defense Organization, no. 13 (Autumn 96), pp. 63–66

Olynyk, Stephen D.
Ukraine as a Post-Cold War Military Power, no. 15 (Spring 97), pp. 87–94

Owens, William A
Overseeing Cross-Service Trade Offs, no. 13 (Autumn 96), pp. 37–40

Peay, J.H. Binford, III
Correlating Medical Forces Forward, no. 14 (Winter 96–97), pp. 70–74

Perry, Charles M.
The Looming Alliance Debate over Nuclear Weapons, no. 15 (Spring 97), pp. 80–86

Pipp, Donald C.
In Search of Focused Logistics, no. 15 (Spring 97), pp. 125–27

Powell, Colin L.
The Chairman as Principal Military Adviser: An Interview, no. 13 (Autumn 96), pp. 29–36

Powers, Earl W.
Knowledge-Based Warfare: A Security Strategy for the Next Century, no. 13 (Autumn 96), pp. 81–89

Price, David E.
Leadership: Some Thoughts on the Military Circa 2025, no. 13 (Autumn 96), pp. 97–99

Prueher, Joseph W.
Rethinking the Joint Doctrine Hierarchy, no. 14 (Winter 96–97), pp. 42–45

Warfighting CINCs in a New Era, no. 13 (Autumn 96), pp. 48–52

Redden, Joseph J.
Joint Doctrine: The Way Ahead, no. 14 (Winter 96–97), pp. 10–12

Reimer, Dennis J.
Dominant Maneuver and Precision Engagement, no. 14 (Winter 96–97), pp. 13–16

Rinaldo, Richard J.
Warfighting and Peace Ops: Do Real Soldiers Do MOOTW? no. 14 (Winter 96–97), pp. 111–16

Robb, Charles S.
Examining Alternative UCP Structures, no. 14 (Winter 96–97), pp. 85–93

Roberts, Mark J.
Hardening Overseas Presence: Force Protection, no. 14 (Winter 96–97), pp. 117–20

Sapolsky, Harvey M.
Interservice Competition: The Solution, Not the Problem, no. 15 (Spring 97), pp. 50–53

Sawyer, David A.
The Joint Doctrine Development System, no. 14 (Winter 96–97), pp. 36–39

Schneider, James J.
Black Lights: Chaos, Complexity, and the Promise of Information Warfare, no. 15 (Spring 97), pp. 21–28

Selva, Paul J.
Knowledge-Based Warfare: A Security Strategy for the Next Century, no. 13 (Autumn 96), pp. 81–89

Shalikashvili, John M.
A Word from the Chairman, no. 13 (Autumn 96), pp. 1, 4–7; no. 14 (Winter 96–97), pp. 1, 4–6; no. 15 (Spring 97), pp. 1, 4; no. 16 (Summer 97), pp. 1, 4–5

Sheehan, John J.
Next Steps in Joint Force Integration, no. 13 (Autumn 96), pp. 41–47

Shelton, Henry H.
Coming of Age: Theater Special Operations Command, no. 14 (Winter 96–97), pp. 50–52

U.S. Navy (Stephen Batiz)

Snider, Don M.
Emergence of the Joint Officer, no. 13 (Autumn 96), pp. 53–57

Starns, John F.
Whatever Happened to Defense Industrial Preparedness? no. 16 (Summer 97), pp. 27–33

Stavridis, James
The Second Revolution, no. 15 (Spring 97), pp. 8–13

Steffens, Thomas W.
Knowledge-Based Warfare: A Security Strategy for the Next Century, no. 13 (Autumn 96), pp. 81–89

Stocker, Jeremy R.
Jointness in Defence of the Realm: A Review Essay, no. 15 (Spring 97), pp. 137–40

Strickland, Frank B., Jr.
It's Not About Mousetraps—Measuring the Value of Knowledge for Operators, no. 13 (Autumn 96), pp. 90–96

Thomas, William C.
Operation Kingpin—Success or Failure? no. 15 (Spring 97), pp. 120–24

Tiersky, Ronald
French Military Reform and NATO Restructuring, no. 15 (Spring 97), pp. 95–102

Tillson, John C.F.
Improving the Management of Reserve Forces, no. 16 (Summer 97), pp. 39–43

Tuozzolo, John J.
The Challenge of Civil-Military Operations, no. 16 (Summer 97), pp. 54–58

U.S. Navy (James Slaughterhaupt)

van Tol, Jan M.
Military Innovation and Carrier Aviation—The Relevant History, no. 16 (Summer 97), pp. 77–87

Walker, Jack
Leveraging Technology for Joint Training, no. 16 (Summer 97), pp. 104–08

Walker, Nancy J.
EUCOM and Sub-Saharan Africa, no. 15 (Spring 97), pp. 103–07

Welch, William G.
The Everyman's Joint Library: A Review Essay, no. 14 (Winter 96–97), pp. 128–30

Wells, Gordon M.
Deep Operations, Command and Control, and Joint Doctrine: Time for a Change? no. 14 (Winter 96–97), pp. 101–05

Wheelock, Kevin R.
Review Criteria for the Logistic Plan, no. 15 (Spring 97), pp. 128–33

Whetstone, Shawn C.
Joint Training for MOOTW: A Book Review, no. 15 (Spring 97), pp. 140–41

White, John P.
Defense Organization Today, no. 13 (Autumn 96), pp. 18–22

Wilkerson, Lawrence B.
What Exactly Is Jointness? no. 16 (Summer 97), pp. 66–68

Willis, T. LaMar
Knowledge-Based Warfare: A Security Strategy for the Next Century, no. 13 (Autumn 96), pp. 81–89

Winner, Andrew C.
The Looming Alliance Debate over Nuclear Weapons, no. 15 (Spring 97), pp. 80–86

Young, Thomas-Durell
Joint Doctrine Development: Overcoming a Legacy, no. 14 (Winter 96–97), pp. 94–100

Zoufal, Donald R.
Transition of the Sarajevo Suburbs, no. 16 (Summer 97), pp. 50–53

JFQ

Articles published in *JFQ* are listed in the *Air University Index to Military Periodicals*. In addition, a complete cumulative index of issues 1–16 can be found on the Internet at http://www.ndu.edu/ndu/inss/jfq/jfq.html.

DISTRIBUTION: *JFQ* is distributed to the field and fleet through service channels. Individuals and organizations interested in receiving the journal on a regular basis should make their requirements known through command channels. Any corrections in shipping instructions for service distribution should be directed to the appropriate activity listed below.

- **Army**—Contact the installation publications control officer (citing Misc. Publication 71–1) or write: U.S. Army Publications Distribution Center, ATTN: Customer Service, 1655 Woodson Street, St. Louis, Missouri 63114–6181, or call (314) 263–7305 / DSN 693–7305 (extension 268); or order via Starpubs or the Internet [http://www.usappc.hoffman.army.mil].
- **Navy**—Contact the Navy Inventory Control Point, Customer Service List Maintenance (Code 3343.09), 700 Robbins Avenue, Philadelphia, Pennsylvania 19111–5098; requests may be sent by Fax to (215) 697–5914 (include SNDL, UIC, and full address).
- **Marine Corps**—For one-time distribution of an individual issue write to Marine Corps Logistics Base (Code 876), 814 Radford Boulevard, Albany, Georgia 31704–1128; request by Fax at (912) 439–5839 / DSN 567–5839. To be placed on standard distribution contact Headquarters, U.S. Marine Corps (Code ARDE), Federal Building No. 2 (Room 1302), Navy Annex, Washington, D.C. 20380; request by Fax at (703) 614–2951 / DSN 224–2951.
- **Air Force**—Submit AF Form 764A with short title "JFQN (indicate issue number)" to the base publications distribution office to establish unit requirement through the Air Force Distribution Center, 2800 Eastern Boulevard, Baltimore, Maryland 21220–2896.
- **Coast Guard**—Contact Headquarters, U.S. Coast Guard, ATTN: Defense Operations Division, 2100 2d Street, S.W., Washington, D.C. 20593–0001.

In addition to service channels, bulk distribution is made directly to defense agencies, the Joint Staff, unified commands, service colleges, and other activities. Changes in shipping instructions should be communicated to the Editor (see schedule below).

SUBSCRIPTIONS: *JFQ* is available by subscription from the Government Printing Office. To order for one year, cite: *Joint Force Quarterly* (*JFQ*) on the order and mail with a check for $17.00 ($21.25 foreign) or provide a VISA or MasterCard account number with expiration date to the Superintendent of Documents, P.O. Box 371954, Pittsburgh, Pennsylvania 15250–7954, or Fax the order to: (202) 512–2233.

Individual copies may be purchased through GPO bookstores nationwide for $8.00 each.

CONTRIBUTIONS: *JFQ* welcomes submissions from members of the Armed Forces as well as from both defense analysts and academic specialists from this country and abroad, including foreign military officers and civilians. There is no required length for contributions, but manuscripts of 3,000 to 5,000 words are appropriate. Other submissions, however, to include letters, commentary, and brief essays are invited. Reproductions of supporting material (such as maps and photos) should be submitted with manuscripts; do *not* send originals. Unsolicited book reviews are generally not accepted for publication.

All submissions to *JFQ* must be accompanied by a covering letter which states that the manuscript has not been previously published and is not being submitted simultaneously to any other publication. In addition, the letter must include the author's full name (including military grade, service/component, and assignment if applicable), a complete postal address (with Zip code), and a work telephone number. Submissions which do not comply with these conditions may not be considered for publication. Neither facsimile nor e-mail manuscripts will be accepted as formal submissions.

All unsolicited manuscripts are reviewed, a process which may take two to three months. To facilitate review, provide three copies of the manuscript together with a 150-word summary. Place personal or biographical data on a separate sheet of paper and do not identify the author (or authors) in the body of the text. Follow any accepted style guide in preparing the manuscript, but endnotes rather than footnotes should always be used. The manuscript should be double-spaced with one-inch margins.

JFQ reserves the right to edit contributions to meet space limitations and conform to the journal's style and format. Proofs of articles accepted for publication are not normally returned to authors for review.

Unless evidence of prior clearance is provided, all manuscripts selected for publication which are contributed by members of the U.S. Armed Forces or employees of the Federal Government are forwarded to the Office of the Assistant Secretary of Defense for Public Affairs to undergo security review. No honorarium or other form of payment is authorized for the publication of articles submitted by servicemembers or U.S. Government employees.

If possible submit the manuscript on a disk together with the typescript version. While 3.5- and 5.25-inch disks in various formats can be processed, WordPerfect is preferred (disks will not be returned unless requested). Information on the submission of contributions is available by contacting (202) 685–4220 / DSN 325–4220, Fax: (202) 685–4219 / DSN 325–4219, or writing to the Editor, *Joint Force Quarterly,* ATTN: NDU–NSS–JFQ, 300 Fifth Avenue (Bldg. 62), Fort Lesley J. McNair, Washington, D.C. 20319–5066. JFQ

DISTRIBUTION SCHEDULE

A total of 35,000 copies of *Joint Force Quarterly* is distributed worldwide. Of this number, more than 17,500 copies are sent directly to the five services for break down and delivery to subordinate commands, units, bases, etc. Bulk shipments also are made to other organizations listed below.

	copies
Office of the Secretary of Defense	400
Joint Staff and Joint Activities	700
Services	
Army	3,000
Navy	6,500
Marine Corps	1,500
Air Force	6,500
Coast Guard	125
Unified Commands	
U.S. European Command	275
U.S. Pacific Command	275
U.S. Forces Korea	75
U.S. Forces Japan	50
Alaska Command	25
U.S. Atlantic Command	150
U.S. Southern Command	150
U.S. Central Command	275
U.S. Strategic Command	275
U.S. Space Command	150
U.S. Special Operations Command	150
U.S. Transportation Command	100
Defense Agencies	
Defense Information Systems Agency	125
Defense Intelligence Agency	150
Defense Logistics Agency	150
Defense Mapping Agency	25
Defense Nuclear Agency	25
National Security Agency	25
PME Institutions	
U.S. Army War College	600
U.S. Army Command and General Staff College (including the School of Advanced Military Studies)	1,525
Naval War College (both resident and nonresident programs)	1,750
Naval Postgraduate School	300
Marine Corps War College and Marine Corps Command and Staff College	400
Air War College	450
Air Command and Staff College (including the School of Advanced Airpower Studies)	900

In addition to the above, copies of *JFQ* are distributed to general/flag rank officers and members of Congress; service doctrine centers; both U.S. and foreign military attachés; and selected educational institutions, journals, and libraries in this country and abroad.

coming next . . .

Asia-Pacific Security
plus
the services and *JV 2010*,
joint experimentation,
force protection,
***and more in the Autumn 97 issue of* JFQ**

JFQ

JOINT FORCE QUARTERLY

Published for the
Chairman of the Joint Chiefs of Staff
by the Institute for National Strategic Studies
National Defense University
Washington, D.C.